

Cellular Expression of β_2 AR- β gal $\Delta\alpha$ Fusion Protein in C2 Clones
(measured by anti- β -gal ELISA)

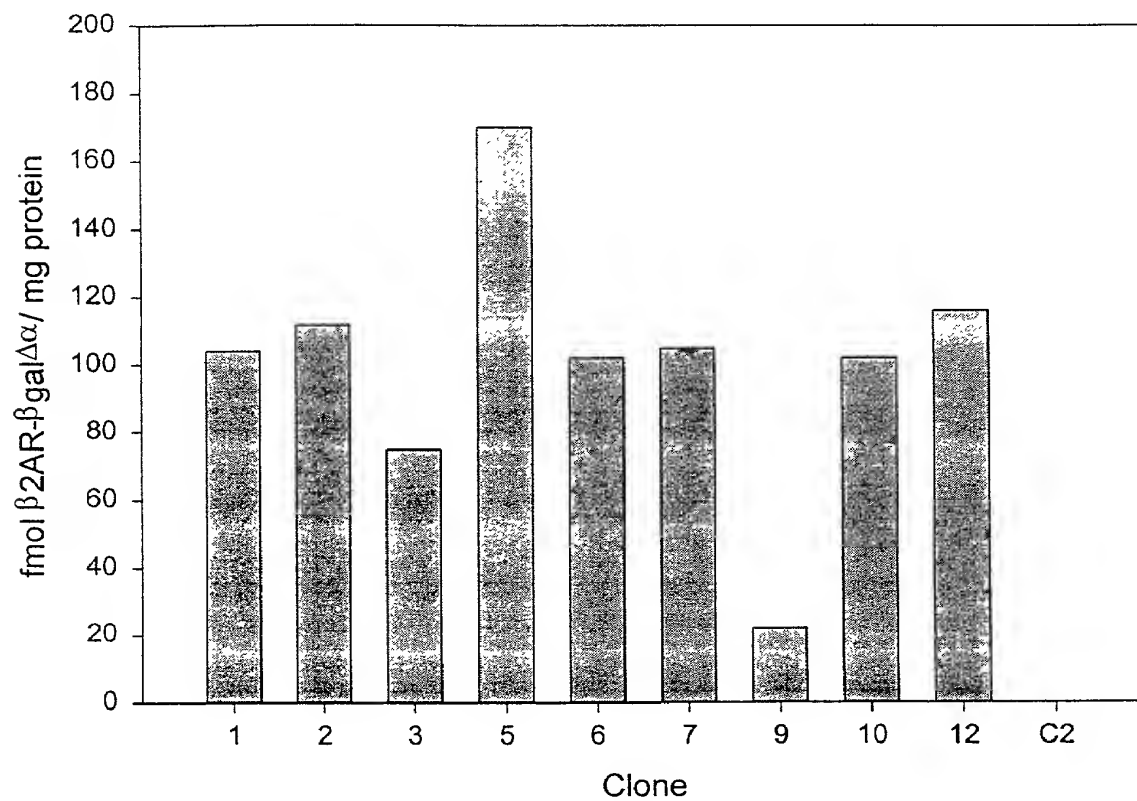


FIGURE 1A

Cellular expression of β Arr2- β gal $\Delta\omega$ fusion protein in C2 clones
(measured by anti- β gal ELISA)

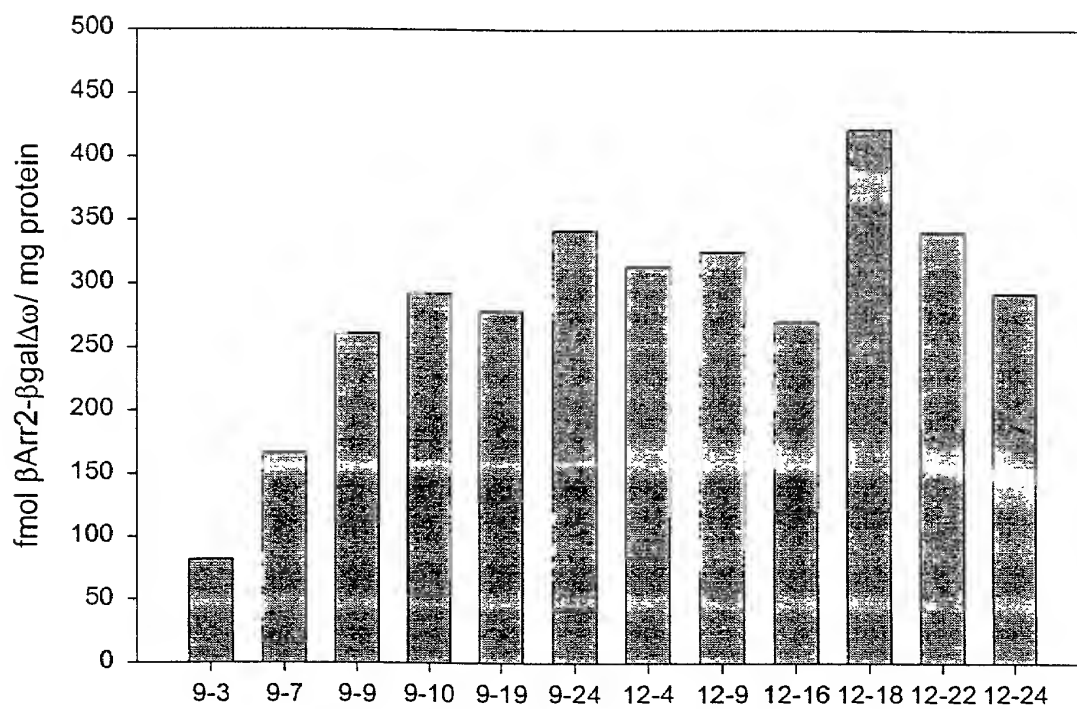


FIGURE 1B

Agonist Stimulated cAMP Response in C2 Cells Expressing $\beta 2AR$ - $\beta gal\Delta\alpha$

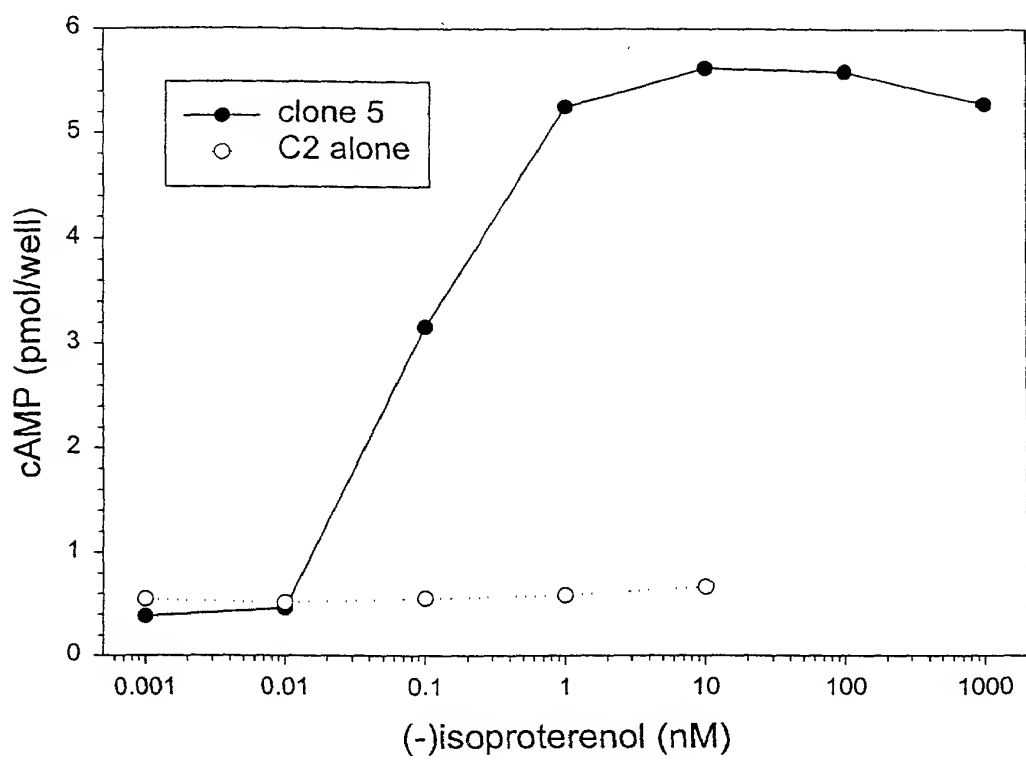


FIGURE 2

β -galactosidase Complementation as a Measurement for β 2AR- β gal $\Delta\alpha$ interacting with β Arrestin2- β gal $\Delta\omega$ upon agonist Stimulation

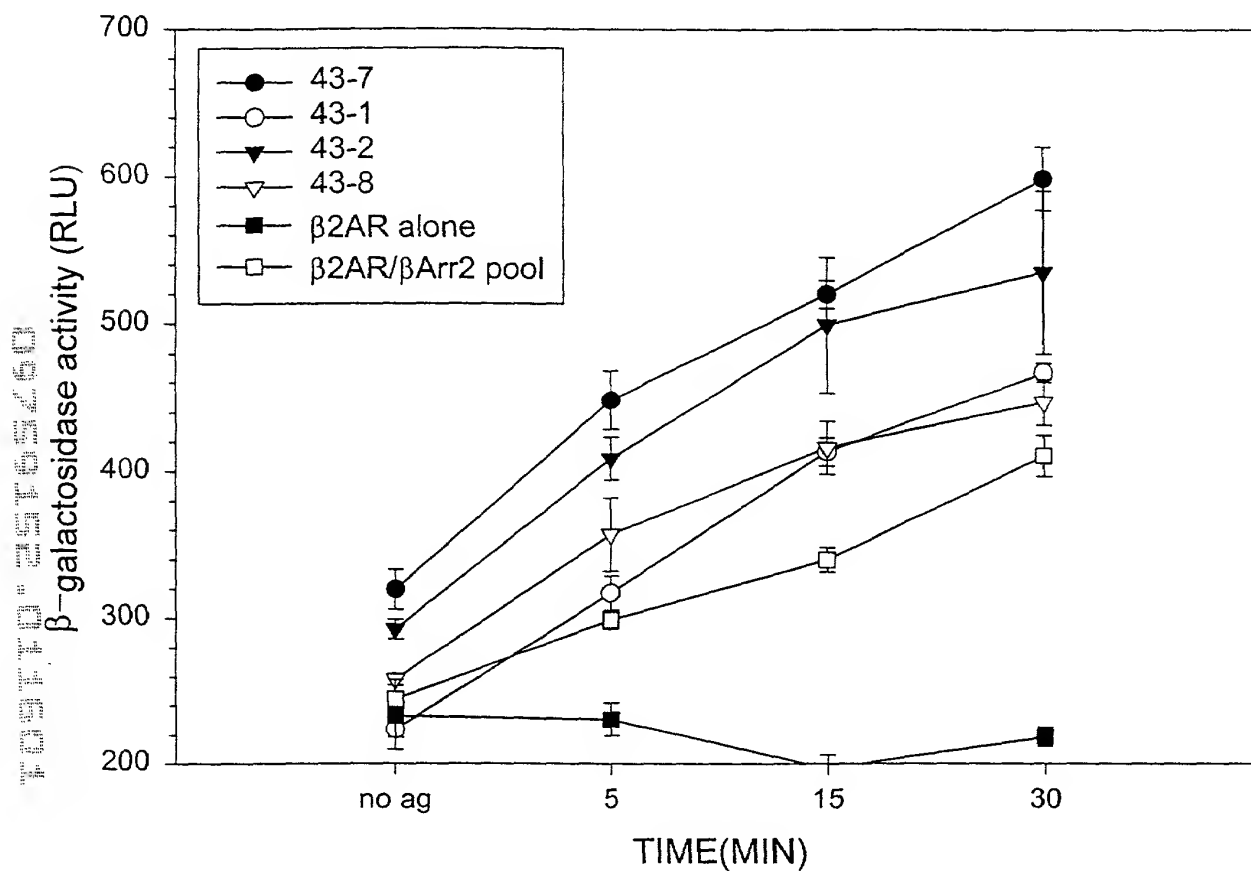


FIGURE 3A

β -galactosidase Complementation as a Measurement for β 2AR- β gal $\Delta\alpha$ Interaction with β Arrestin1- β gal $\Delta\omega$ upon Agonist Stimulation

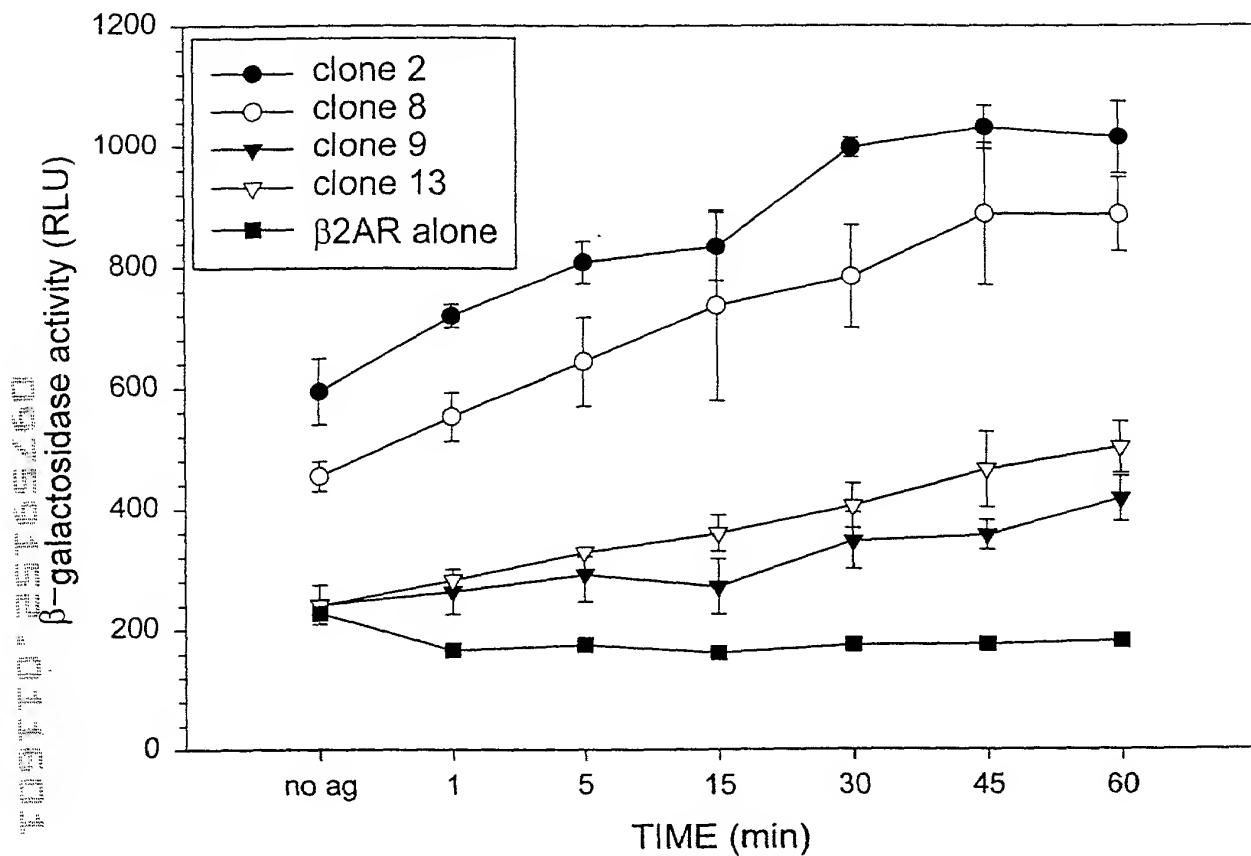


FIGURE 3B

β -galactosidase Activity in Response to Agonist in C2 Cells
Coexpressing β 2AR- β gal $\Delta\alpha$ and β Arrestin2- β gal $\Delta\omega$ Fusion Proteins

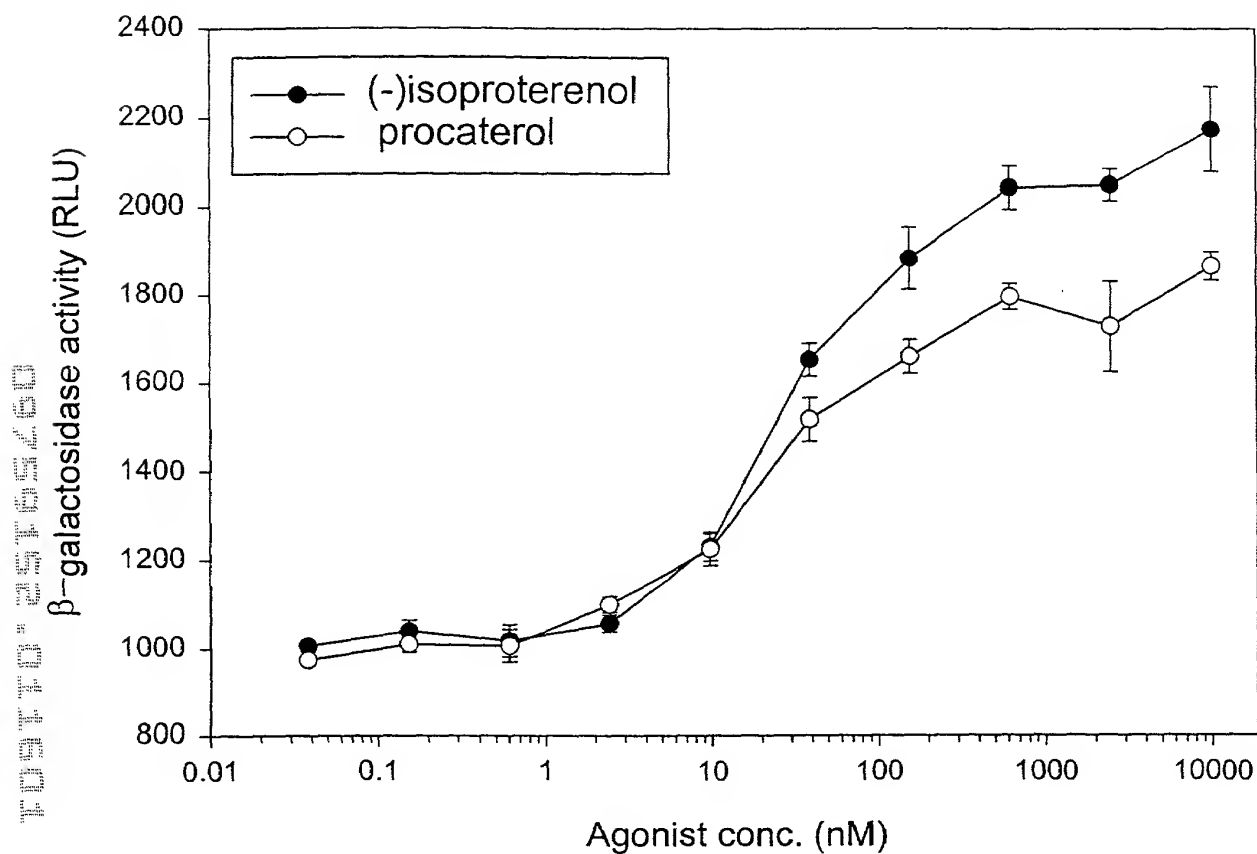


FIGURE 4A

β -galactosidase Activity in Response to Agonist in C2 Cells
Coexpressing β 2AR- β gal $\Delta\alpha$ and β Arrestin1- β gal $\Delta\omega$ Fusion Proteins

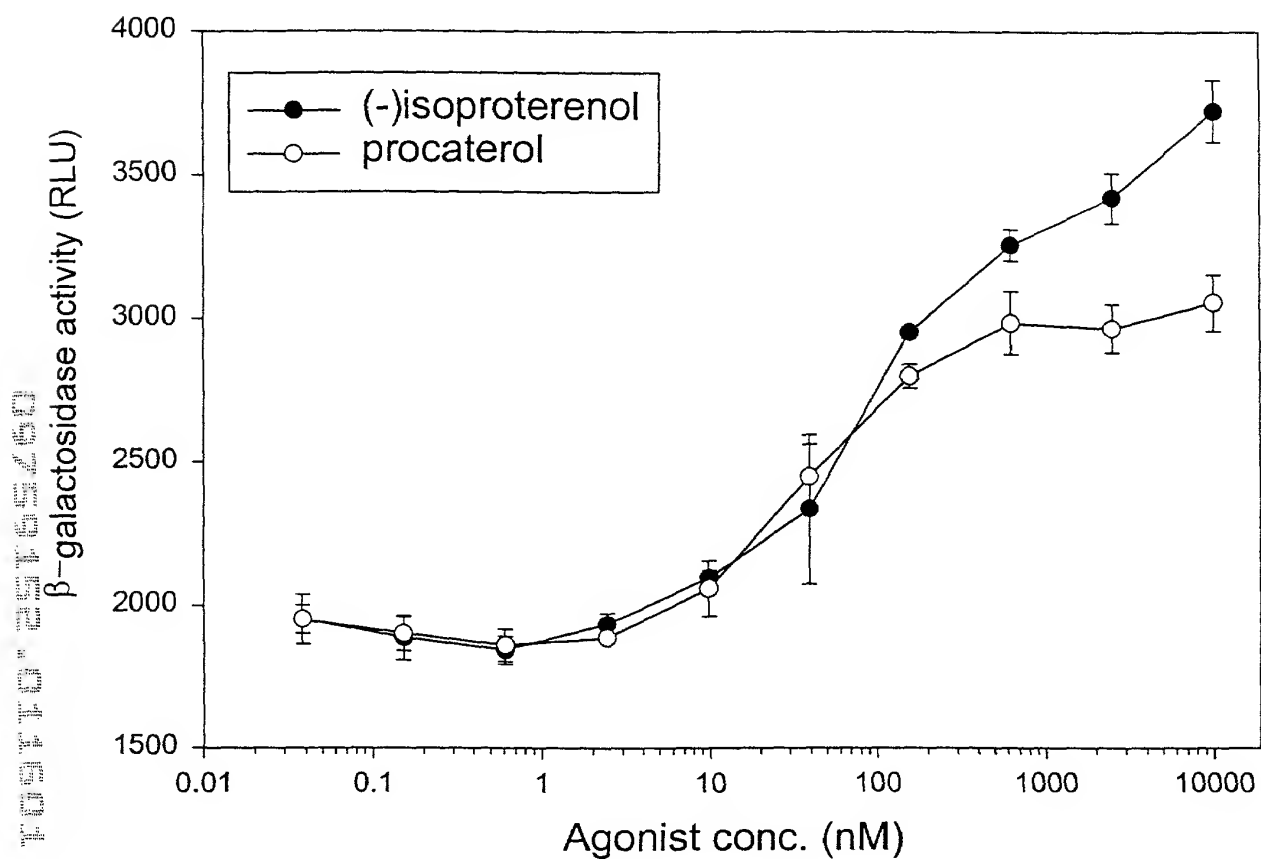


FIGURE 4B

Inhibition of β -galactosidase activity in C2 Cells Coexpressing β 2AR- β gal $\Delta\alpha$ and β Arrestin2- β gal $\Delta\omega$ Fusion Proteins

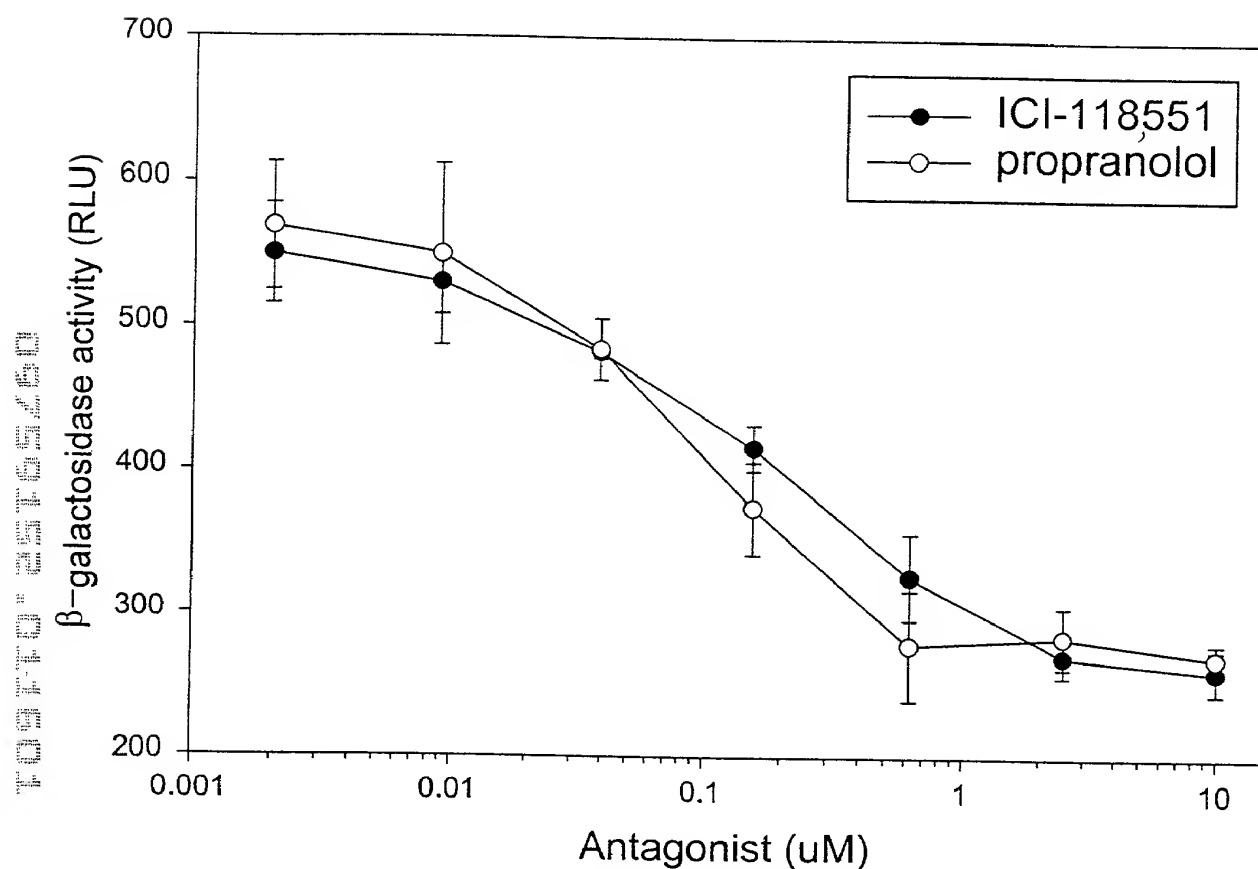


FIGURE 5A

Antagonist Inhibition of β -galactosidase Activity in C2 Cells
Coexpressing β 2AR- β gal $\Delta\alpha$ and β Arrestin1- β gal $\Delta\omega$ Fusion Proteins

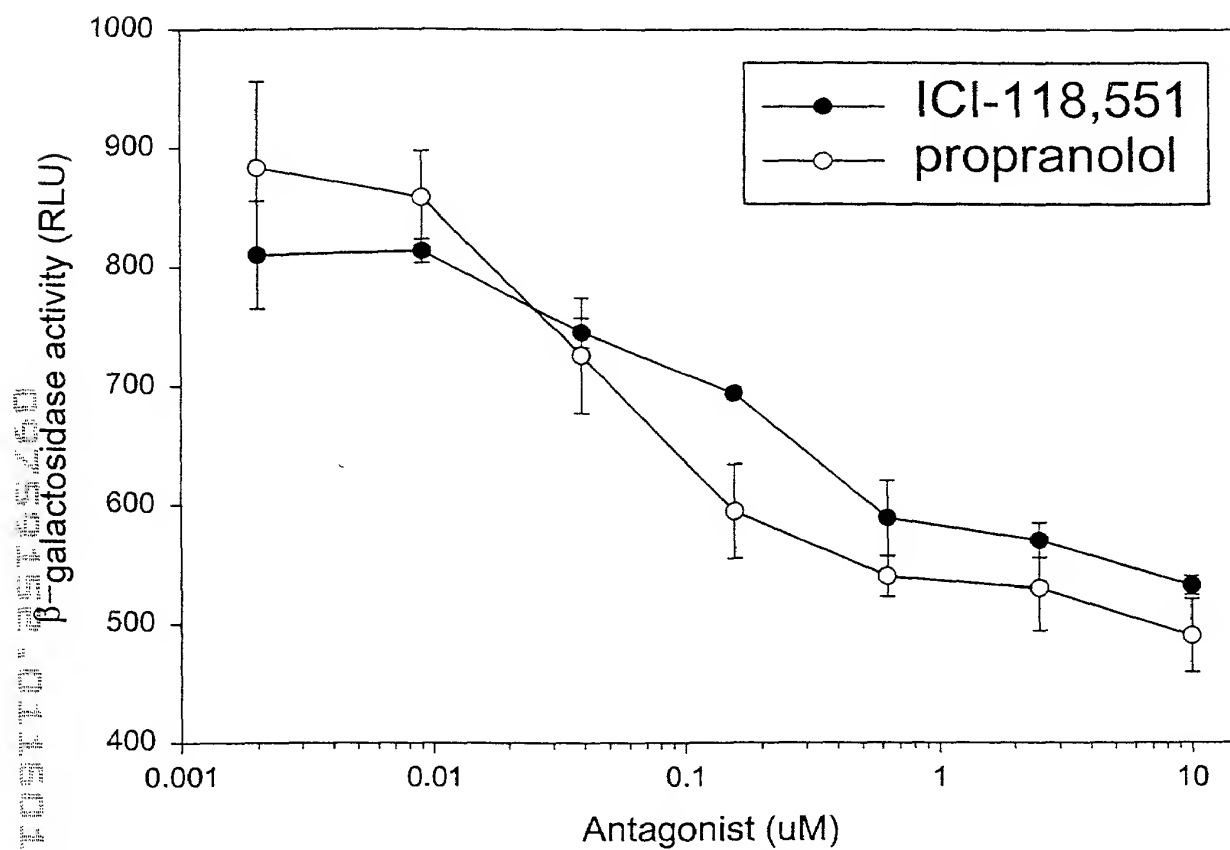


Figure 5B

Agonist Stimulated cAMP Response in Clones or Pools of C2 Cells Coexpressing A2aR- β gal $\Delta\alpha$ and β Arrestin1- β gal $\Delta\omega$ Fusion Proteins

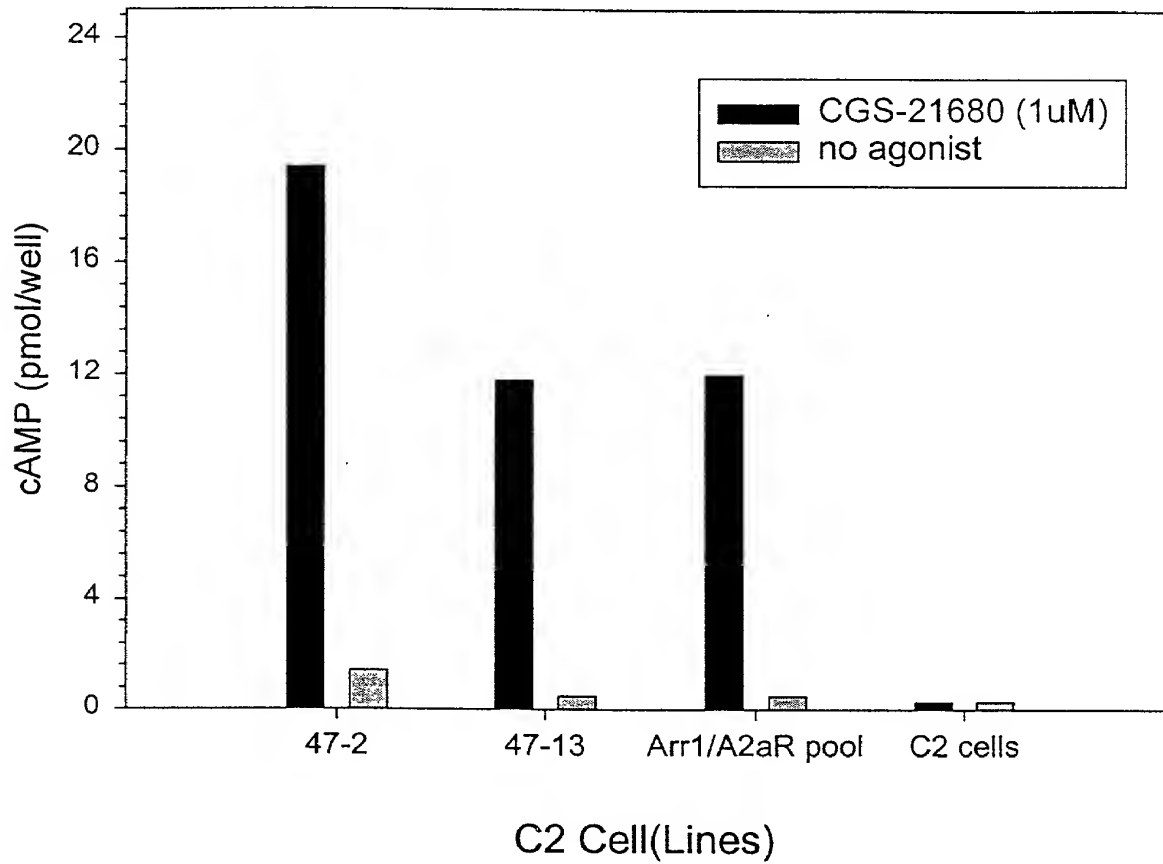


FIGURE 6

Agonist Stimulated cAMP Response in Clones or Pools of C2 Cells Expressing D1- β gal $\Delta\alpha$ and β Arrestin2- β gal $\Delta\omega$ Fusion Proteins

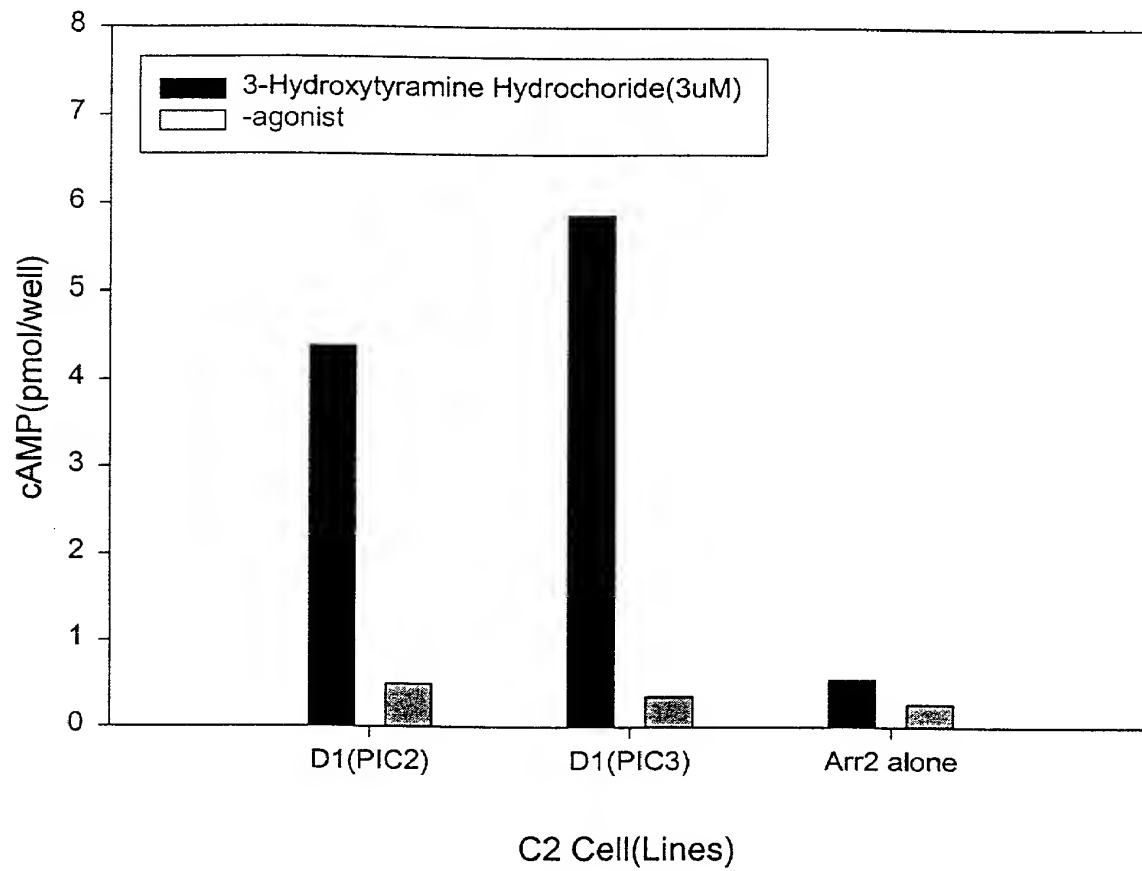


FIGURE 7

**β_2 AR- β gal $\Delta\omega$ and β arr2- β gal $\Delta\alpha$ Interaction in HEK293
Clones in Response to Isoproterenol Treatment (1 μ M)**

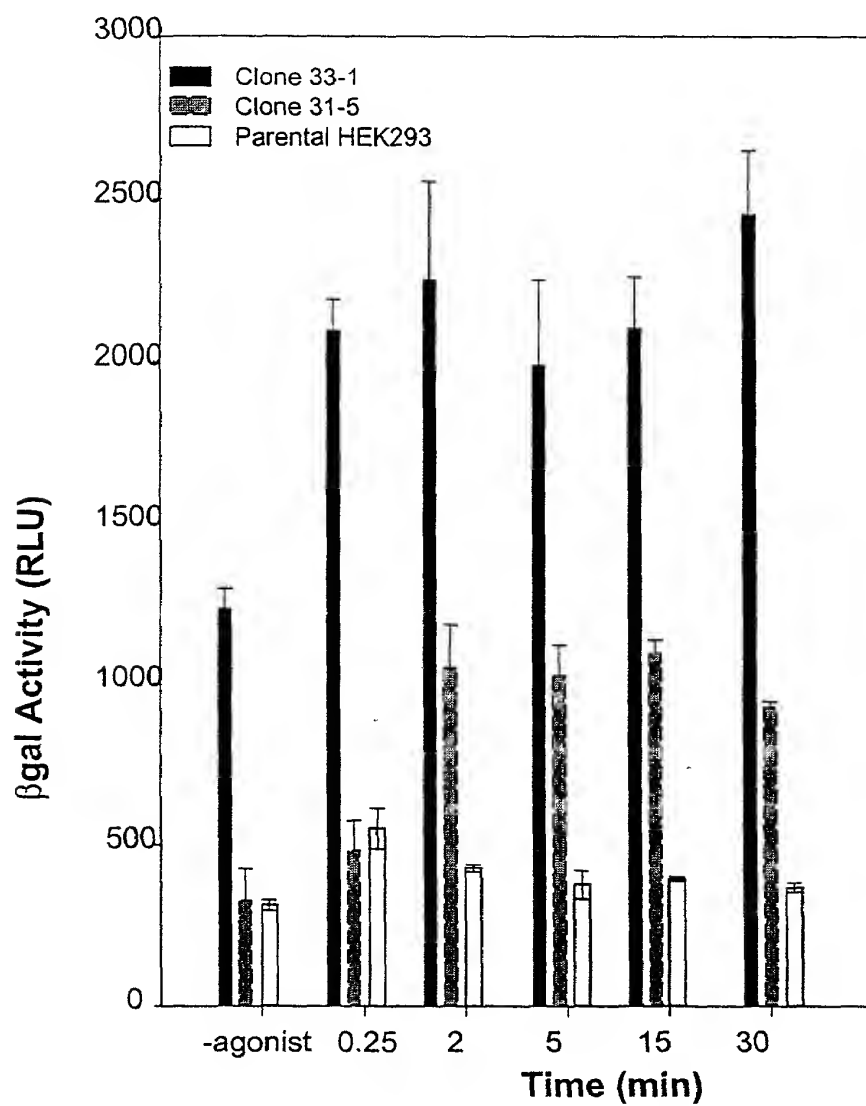


FIGURE 8A

$\beta 2AR$ - $\beta gal\Delta\alpha$ and $\beta Arr1$ - $\beta gal\Delta\omega$ Interaction in a CHO Pool
in Response to Isoproterenol Treatment(10 μ M)

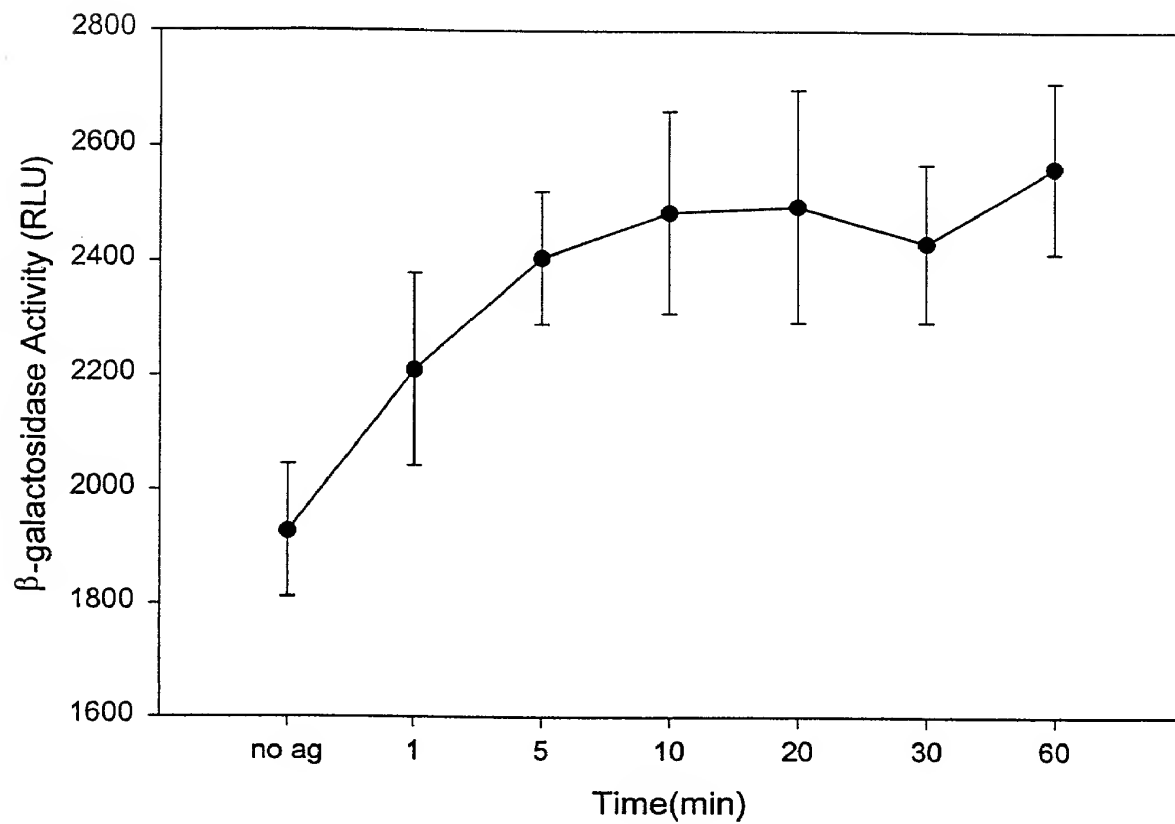


FIGURE 8B

β 2AR- β gal $\Delta\alpha$ and β Arr2- β gal $\Delta\omega$ Interaction in CHW Clone
in Response to Isoproterenol Treatment (10uM)

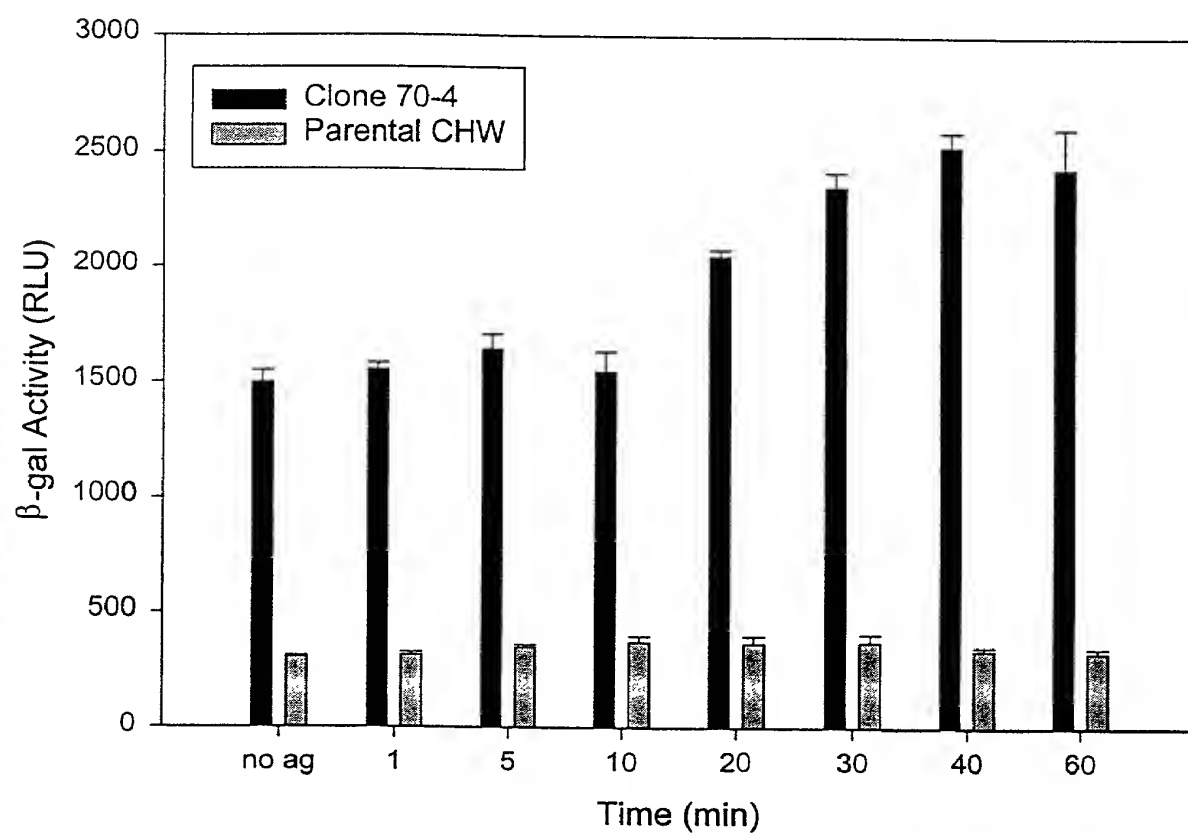


FIGURE 8C

β -galactosidase Complementation as a Measurement for
Adrenergic Receptor Homodimerization in HEK 293 Cells
Coexpressing $\beta 2AR$ - $\beta gal\Delta\alpha$ and $\beta 2AR$ - $\beta gal\Delta\omega$.

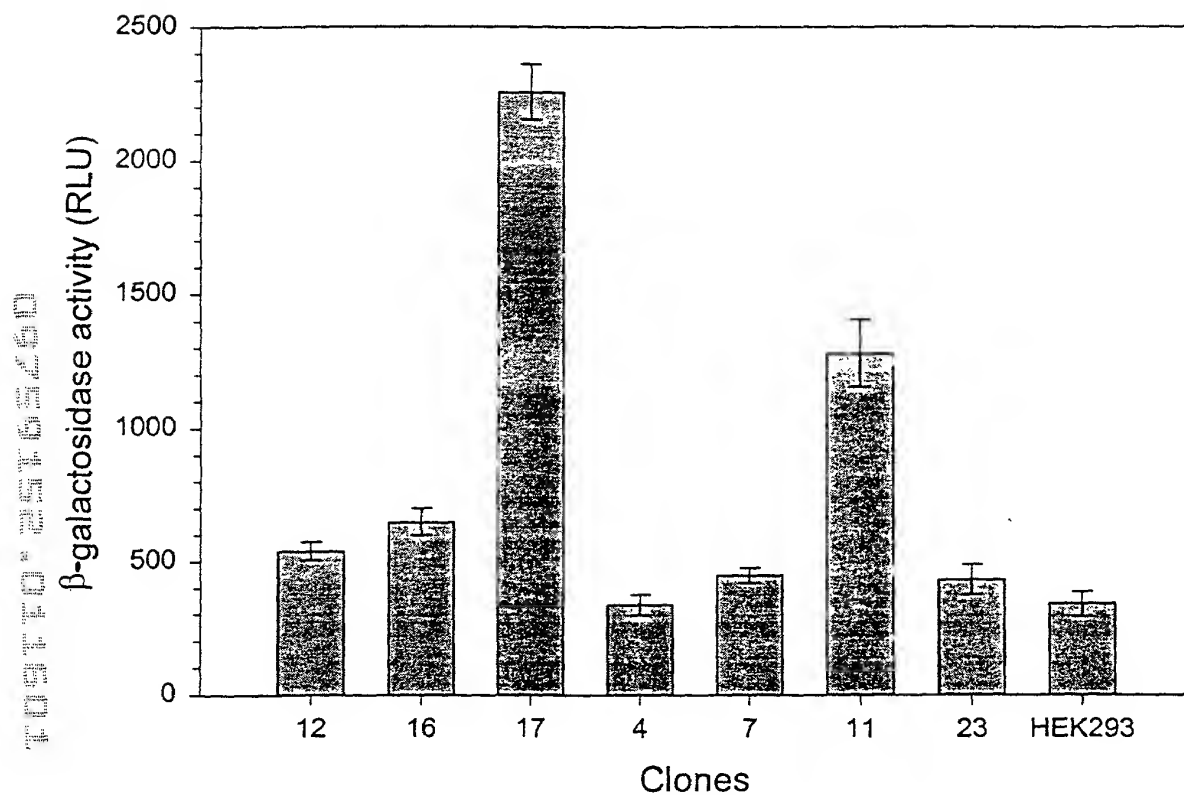


FIGURE 9A

Agonist Stimulated cAMP Response in HEK 293 Cells
Coexpressing $\beta 2AR$ - $\beta gal\Delta\alpha$ and $\beta 2AR$ - $\beta gal\Delta\omega$

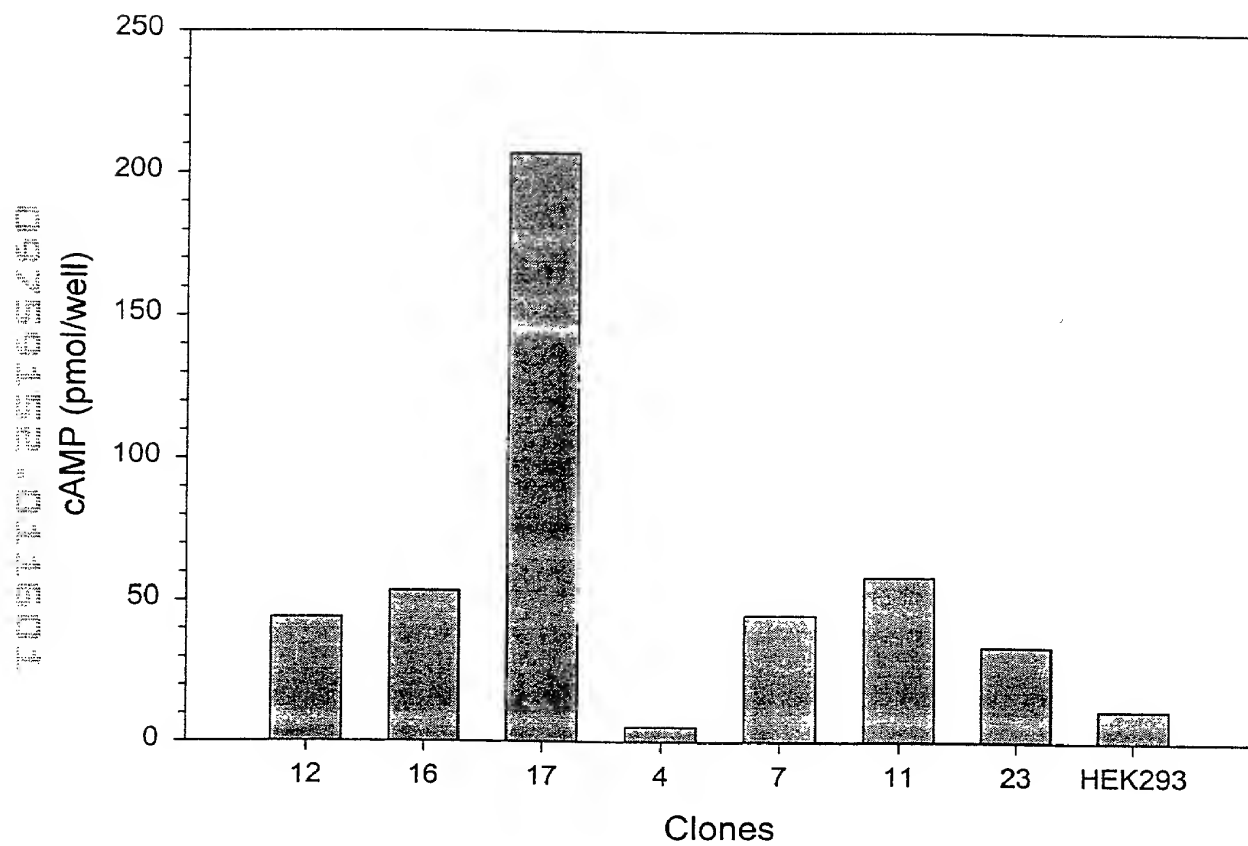


FIGURE 9B

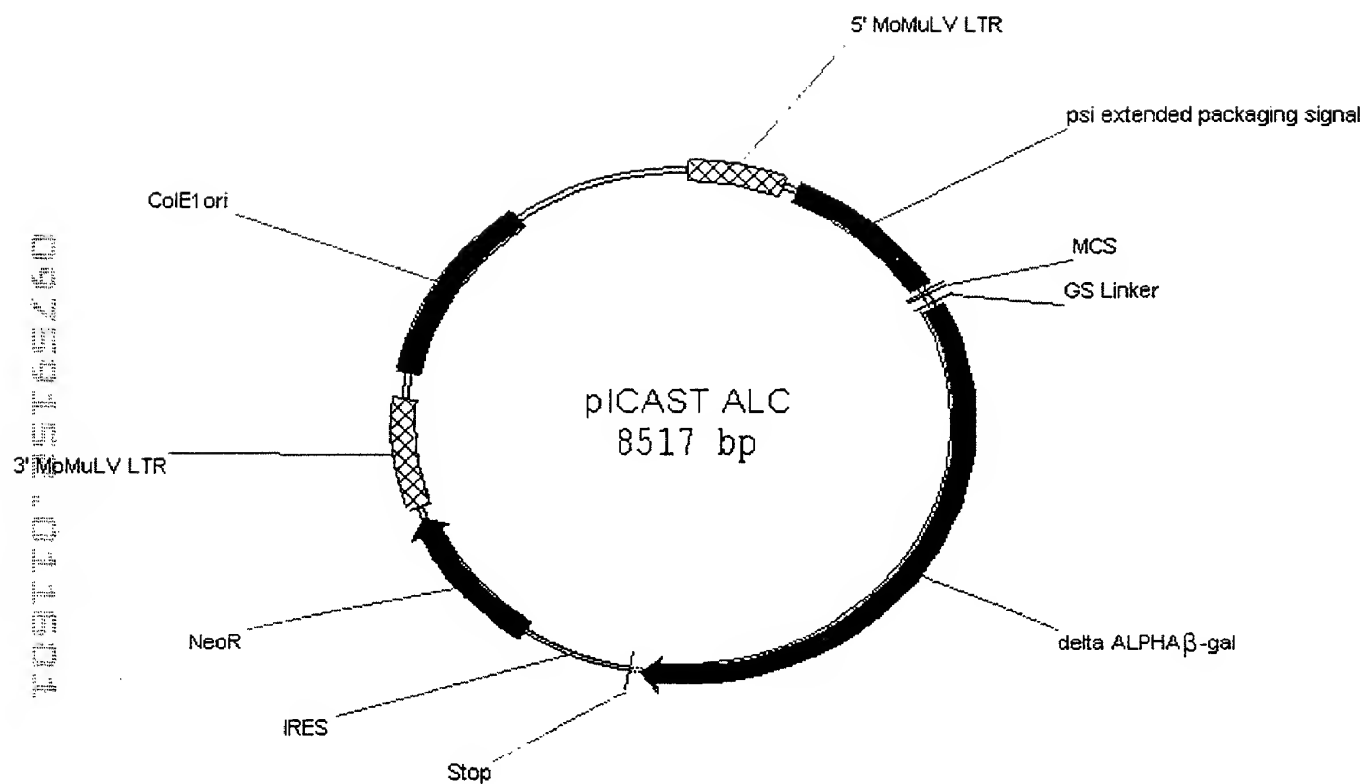


Figure 10A

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   CGAGTTATTT TCTCGGGTGT TGGGGAGTGA GCGGCGGGT CAGGAGGCTA
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   ACTGACTCAG CGGGCCCATG GGCACATAGG TTATTTGGGA GAACGTCAAC
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   GTAGGCTGAA CACCAGAGCG ACAAGGAACC CTCCAGAGG AGACTCACTA
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   CTCTGGGGAC GGGTCCCTGG TGGCTGGGTG GTGGCCCTCC GTTCGACCGG
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FIGURE 10B

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+2 N W L G L G P Q E N Y P D R L T
4051 AAAGTGGCTC GGATTAGGGC CGCAAGAAAA CTATCCCGAC CGCCTTACTG
    TTTGACCGAG CCTAATCCCG GCGTTCCTTT GATAGGGCTG GCGGAATGAC

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+2 A A C F D R W D L P L S D M Y T P
-----
4101 CCGCCTGTTT TGACCGCTGG GATCTGCCAT TGTCAGACAT GTATACCCCG
      GGCGGACAAA ACTGGCGACC CTAGACGGTA ACAGTCTGTA CATATGGGGC
-----
+2 Y V F P S E N G L R C G T R E L N
-----
4151 TACGTCTTCC CGAGCGAAAA CGGTCTGCGC TGCGGGACGC GCGAATTGAA
      ATGCAGAAGG GCTCGCTTTT GCCAGACGCG ACGCCCTGCG CGCTTAACTT
-----
+2 Y G P H Q W R G D F Q F N I S R
-----
4201 TTATGGCCCA CACCACTGGC GCGGCGACTT CCAGTTCAAC ATCAGCCGCT
      AATACCGGGT GTGGTCAACG CGCCGCTGAA GGTCAAGTTG TAGTCGGCGA
-----
+2 Y S Q Q Q L M E T S H R H L L H A
-----
4251 ACAGTCAACA GCAACTGATG GAAACCAGCC ATCGCCATCT GCTGCACGCG
      TGTCAGTTGT CGTTGACTAC CTTTGGTCGG TAGCGGTAGA CGACGTGCGC
-----
+2 E E G T W L N I D G F H M G I G G
-----
4301 GAAGAAGGCA CATGGCTGAA TATCGACGGT TTCCATATGG GGATTGGTGG
      CTTCTTCCGT GTACCGACTT ATAGCTGCCA AAGGTATACC CCTAACCACC
-----
+2 D D S W S P S V S A E F Q L S A
-----
4351 CGACGACTCC TGGAGCCCGT CAGTATCGGC GGAATTCCAG CTGAGCGCCG
      GCTGCTGAGG ACCTCGGGCA GTCATAGCCG CCTTAAGGTC GACTCGCGGC
-----
+2 G R Y H Y Q L V W C Q K R S D Y K
-----
4401 GTCGCTACCA TTACCACTTG GTCTGGTGTC AAAAAAGATC TGAATAAAA
      CAGCGATGGT AATGGTCAAC CAGACCACAG TTTTTCCTAG ACTGATATT
-----
+2 D E D L D H H H H H H R
-----
4451 GATGAGGACC TCGACCATCA TCATCATCAT CACCGGTAAT AATAGGTAGA
      CTACTCCTGG AGCTGGTAGT AGTAGTAGTA GTGGCCATTA TTATCCATCT
-----
4501 TAAGTGACTG ATTAGATGCA TTGATCCCTC GACCAATTCC GGTTATTTTC
      ATTCAGTGAC TAATCTACGT AACTAGGGAG CTGGTTAAGG CCAATAAAAG
-----
4551 CACCATATTG CCGTCTTTTG GCAATGTGAG GGCCCGGAAA CCTGGCCCTG
      GTGGTATAAC GGCAGAAAAC CGTTACACTC CCGGGCCTTT GGACCGGGAC
-----
4601 TCTTCTTGAC GAGCATTCCT AGGGGTCTTT CCCCTCTCGC CAAAGGAATG
      AGAAGAACTG CTCGTAAGGA TCCCAGAAA GGGGAGAGCG GTTTCCTTAC
-----
4651 CAAGGTCTGT TGAATGTCGT GAAGGAAGCA GTTCCTCTGG AAGCTTCTTG
      GTTCCAGACA ACTTACAGCA CTTCTTCGT CAAGGAGACC TTCGAAGAAC
-----
4701 AAGACAAACA ACGTCTGTAG CGACCCCTTG CAGGCAGCGG AACCCCCAC
      TTCTGTTTGT TGCAGACATC GCTGGGAAAC GTCCGTCGCC TTGGGGGGTG
-----
4751 CTGGCGACAG GTGCCTCTGC GGCCAAAAGC CACGTGTATA AGATACACCT
      GACCGCTGTC CACGGAGACG CCGGTTTTCG GTGCACATAT TCTATGTGGA
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4801 GCAAAGGCGG CACAACCCCA GTGCCACGTT GTGAGTTGGA TAGTTGTGGA
CGTTTCCGCC GTGTTGGGGT CACGGTGCAA CACTCAACCT ATCAACACCT

4851 AAGAGTCAAA TGGCTCTCCT CAAGCGTATT CAACAAGGGG CTGAAGGATG
TTCTCAGTTT ACCGAGAGGA GTTCGCATAA GTTGTTCCTT GACTTCCTAC

4901 CCCAGAAGGT ACCCCATTGT ATGGGATCTG ATCTGGGGCC TCGGTGCACA
GGGTCTTCCA TGGGGTAACA TACCCTAGAC TAGACCCCGG AGCCACGTGT

4951 TGCTTTTACAT GTGTTTAGTC GAGGTTAAAA AACGTCTAGG CCCCCGAAC
ACGAAATGTA CACAAATCAG CTCCAATTTT TTGCAGATCC GGGGGGCTTG

5001 CACGGGGACG TGGTTTTCTT TTGAAAAACA CGATGATAAT ACCATGATTG
GTGCCCCTGC ACCAAAAGGA AACTTTTTTGT GCTACTATTA TGGTACTAAC

5051 AACAAGATGG ATTGCACGCA GGTTCTCCGG CCGCTTGGGT GGAGAGGCTA
TTGTTCTACC TAACGTGCGT CCAAGAGGCC GGCGAACCCA CCTCTCCGAT

5101 TTCGGCTATG ACTGGGCACA ACAGACAATC GGCTGCTCTG ATGCCGCCGT
AAGCCGATAC TGACCCGTGT TGTCTGTTAG CCGACGAGAC TACGGCGGCA

5151 GTTCCGGCTG TCAGCGCAGG GCGCGCCGGT TCTTTTTGTC AAGACCGACC
CAAGGCCGAC AGTCGCGTCC CCGCGGGCCA AGAAAAACAG TTCTGGCTGG

5201 TGTCCGGTGC CCTGAATGAA CTGCAGGACG AGGCAGCGCG GCTATCGTGG
ACAGGCCACG GGACTTACTT GACGTCCTGC TCCGTCGCGC CGATAGCACC

5251 CTGGCCACGA CGGGCGTTCC TTGCGCAGCT GTGCTCGACG TTGTCACTGA
GACCGGTGCT GCGCGCAAGG AACCGCTCGA CACGAGCTGC AACAGTGA

5301 AGCGGGAAGG GACTGGCTGC TATTGGGCGA AGTGCCGGGG CAGGATCTCC
TCGCCCTTCC CTGACCGACG ATAACCCGCT TCACGGCCCC GTCTAGAGG

5351 TGTCACTCA CCTTGCTCCT GCCGAGAAAG TATCCATCAT GGCTGATGCA
ACAGTAGAGT GGAACGAGGA CGGCTCTTTC ATAGGTAGTA CCGACTACGT

5401 ATGCGGCGGC TGCATACGCT TGATCCGGCT ACCTGCCCCT TCGACCACCA
TACGCCGCCG ACGTATGCGA ACTAGGCCGA TGGACGGGTA AGCTGGTGGT

5451 AGCGAAACAT CGCATCGAGC GAGCACGTAC TCGGATGGAA GCCGGTCTTG
TCGCTTTGTA GCGTAGCTCG CTCGTGCATG AGCCTACCTT CGGCCAGAAC

5501 TCGATCAGGA TGATCTGGAC GAAGAGCATC AGGGGCTCGC GCCAGCCGAA
AGCTAGTCCT ACTAGACCTG CTTCTCGTAG TCCCCGAGCG CGGTCCGGCT

5551 CTGTTCGCCA GGCTCAAGGC GCGCATGCCC GACGGCGAGG ATCTCGTCGT
GACAAGCGGT CCGAGTTCCG CCGGTACGGG CTGCCGCTCC TAGAGCAGCA

5601 GACCCATGGC GATGCCTGCT TGCCGAATAT CATGGTGGAA AATGGCCGCT
CTGGGTACCG CTACGGACGA ACGGCTTATA GTACCACCTT TTACCGGCGA

5651 TTTCTGGATT CATCGACTGT GGCCGGCTGG GTGTGGCGGA CCGCTATCAG
AAAGACCTAA GTAGCTGACA CCGGCCGACC CACACCGCCT GCGGATAGTC

5701 GACATAGCGT TGGCTACCCG TGATATTGCT GAAGAGCTTG GCGGCGAATG
CTGTATCGCA ACCGATGGGC ACTATAACGA CTTCTCGAAC CGCCGCTTAC

5751 GGCTGACCGC TTCCTCGTGC TTTACGGTAT CGCCGCTCCC GATTTCGCAGC
 CCGACTGGCG AAGGAGCAGC AAATGCCATA GCGGCGAGGG CTAAGCGTCG

 5801 GCATCGCCTT CTATCGCCTT CTTGACGAGT TCTTCTGAGC GGGACTCTGG
 CGTAGCGGAA GATAGCGGAA GAACTGCTCA AGAAGACTCG CCCTGAGACC

 5851 GGTTTCGCATC GATAAAATAA AAGATTTTAT TTAGTCTCCA GAAAAAGGGG
 CCAAGCGTAG CTATTTTATT TTCTAAAATA AATCAGAGGT CTTTTTCCCC

 5901 GGAATGAAAG ACCCCACCTG TAGGTTTGGC AAGCTAGCTT AAGTAACGCC
 CCTTACTTTC TGGGGTGGAC ATCCAAACCG TTCGATCGAA TTCATTGCGG

 5951 ATTTTGCAAG GCATGGAAAA ATACATAACT GAGAATAGAG AAGTTCAGAT
 TAAACGTTT CGTACCTTTT TATGTATTGA CTCTTATCTC TTCAAGTCTA

 6001 CAAGGTCAGG AACAGATGGA ACAGCTGAAT ATGGGCCAAA CAGGATATCT
 GTTCAGTCC TTGTCTACCT TGTCGACTTA TACCGGTTT GTCCTATAGA

 6051 GTGGTAAGCA GTTCCTGCCC CGGCTCAGGG CCAAGAACAG ATGGAACAGC
 CACCATTCTG CAAGGACGGG GCCGAGTCCC GGTTCTTGTC TACCTTGTCG

 6101 TGAATATGGG CCAAACAGGA TATCTGTGGT AAGCAGTTCC TGCCCCGGCT
 ACTTATACCC GGTTCGTCTT ATAGACACCA TTCGTCAAGG ACGGGGCCGA

 6151 CAGGGCCAAG AACAGATGGT CCCAGATGC GGTCCAGCCC TCAGCAGTTT
 GTCCCGTTC TTGTCTACCA GGGGTCTACG CCAGGTCGGG AGTCGTCAAA

 6201 CTAGAGAACC ATCAGATGTT TCCAGGGTGC CCCAAGGACC TGAAATGACC
 GATCTCTTGG TAGTCTACAA AGGTCCACG GGGTTCCTGG ACTTTACTGG

 6251 CTGTGCCTTA TTTGAACTAA CCAATCAGTT CGCTTCTCGC TTCTGTTCGC
 GACACGGAAT AAACCTGATT GGTAGTCAA GCGAAGAGCG AAGACAAGCG

 6301 GCGCTTCTGC TCCCCGAGCT CAATAAAGA GCCACAACC CCTCACTCGG
 CGCGAAGACG AGGGGCTCGA GTTATTTTCT CGGGTGTTGG GGAGTGAGCC

 6351 GGCGCCAGTC CTCCGATTGA CTGAGTCGCC CGGGTACCCG TGTATCCAAT
 CCGCGGTCAG GAGGCTAACT GACTCAGCGG GCCCATGGGC ACATAGGTTA

 6401 AAACCCTCTT GCAGTTGCAT CCGACTTGTG GTCTCGCTGT TCCTTGGGAG
 TTTGGGAGAA CGTCAACGTA GGCTGAACAC CAGAGCGACA AGGAACCCTC

 6451 GGTCTCCTCT GAGTGATTGA CTACCCGTCA GCGGGGGTCT TTCATTCTATG
 CCAGAGGAGA CTCACCTAACT GATGGGCAGT CGCCCCAGA AAGTAAGTAC

 6501 CAGCATGTAT CAAAATTAAT TTGGTTTTTT TTCTTAAGTA TTTACATTAA
 GTCGTACATA GTTTTAATTA AACCAAAAAA AAGAATTCAT AAATGTAATT

 6551 ATGGCCATAG TTGCATTAAT GAATCGGCCA ACGCGCGGGG AGAGGCGGTT
 TACCGGTATC AACGTAATTA CTTAGCCGGT TCGCGCGCCC TCTCCGCCAA

 6601 TGCGTATTGG CGCTCTTCCG CTTCTCTGCT CACTGACTCG CTGCGCTCGG
 ACGCATAACC GCGAGAAGGC GAAGGAGCGA GTGACTGAGC GACGCGAGCC

 6651 TCGTTTCGGCT GCGGCGAGCG GTATCAGCTC ACTCAAAGGC GGTAATACGG
 AGCAAGCCGA CGCCGCTCGC CATAGTCGAG TGAGTTTCCG CCATTATGCC

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1  CTGCAGCCTG AATATGGGCC AAACAGGATA TCTGTGGTAA GCAGTTCTCTG
   GACGTCGGAC TTATACCCGG TTTGTCTAT AGACACCATT CGTCAAGGAC
-----
51  CCCC GGCTCA GGGCCAAGAA CAGATGGAAC AGCTGAATAT GGGCCAAACA
   GGGGCCGAGT CCCGGTTCTT GTCTACCTTG TCGACTTATA CCCGGTTTGT
-----
101 GGATATCTGT GGTAAAGCAGT TCCTGCCCCG GCTCAGGGCC AAGAACAGAT
   CCTATAGACA CCATTCTGTC AGGACGGGGC CGAGTCCCGG TTCTTGTCTA
-----
151 GGTCCCCAGA TGCGGTCCAG CCCTCAGCAG TTTCTAGAGA ACCATCAGAT
   CCAGGGGTCT ACGCCAGGTC GGGAGTCGTC AAAGATCTCT TGGTAGTCTA
-----
201 GTTTCAGGG TGCCCAAGG ACCTGAAATG ACCCTGTGCC TTATTTGAAC
   CAAAGGTCCC ACGGGTTCC TGGACTTTAC TGGGACACGG AATAAACTTG
-----
251 TAACCAATCA GTTCGCTTCT CGCTTCTGTT CGCGCGCTTC TGCTCCCCGA
   ATTGGTTAGT CAAGCGAAGA GCGAAGACAA GCGCGCGAAG ACGAGGGGCT
-----
301 GCTCAATAAA AGAGCCCACA ACCCTCACT CGGGGCGCCA GTCCTCCGAT
   CGAGTTATTT TCTCGGGTGT TGGGGAGTGA GCCCCGCGGT CAGGAGGCTA
-----
351 TGA CTGAGTC GCCCGGTAC CCGTGATCC AATAAACCTT CTG CAGTTG
   ACTGACTCAG CGGGCCCATG GGCACATAGG TTATTTGGGA GAACGTCAAC
-----
401 CATCCGACTT GTGGTCTCGC TGTTCTTGG GAGGGTCTCC TCTGAGTGAT
   GTAGGCTGAA CACCAGAGCG ACAAGGAACC CTCCCAGAGG AGACTCACTA
-----
451 TGA CTACCCG TCAGCGGGG TCTTTCATTT GGGGGCTCGT CCGGGATCGG
   ACTGATGGGC AGTCGCCCC AGAAAGTAAA CCCCCGAGCA GGCCCTAGCC
-----
501 GAGACCCCTG CCCAGGGACC ACCGACCAC CACCGGGAGG CAAGCTGGCC
   CTCTGGGGAC GGGTCCCTGG TGGCTGGGTG GTGGCCCTCC GTTCGACCGG
-----
551 AGCAACTTAT CTGTGTCTGT CCGATTGTCT AGTGTCTATG ACTGATTTTA
   TCGTTGAATA GACACAGACA GGCTAACAGA TCACAGATAC TGACTAAAAT
-----
601 TGCGCCTGCG TCGGTACTAG TTAGCTAACT AGCTCTGTAT CTGGCGGACC
   ACGCGGACGC AGCCATGATC AATCGATTGA TCGAGACATA GACCGCTTGG
-----
651 CGTGGTGGAA CTGACGAGTT CTGAACACC GCGCGCAACC CTGGGAGACG
   GCACCACCTT GACTGCTCAA GACTTGTGGG CCGGCGTTGG GACCCTCTGC
-----
701 TCCCAGGGAC TTTGGGGGCC GTTTTGTGG CCCGACCTGA GGAAGGGAGT
   AGGGTCCCTG AAACCCCGG CAAAAACACC GGGCTGGACT CCTTCCCTCA
-----
751 CGATGTGGAA TCCGACCCCG TCAGGATATG TGGTTCTGGT AGGAGACGAG
   GCTACACCTT AGGCTGGGGC AGTCCTATAC ACCAAGACCA TCCTCTGCTC
-----
801 AACCTAAAC AGTTCCCGCC TCCGTCTGAA TTTTGTCTT CGGTTTGGAA
   TTGGATTTTG TCAAGGGCGG AGGCAGACTT AAAACGAAA GCCAAACCTT
-----
851 CCGAAGCCGC GCGTCTTGTG TGCTGCAGCA TCGTTCTGTG TTGTCTCTGT
   GGCTTCGGCG CGCAGAACAG ACGACGTCGT AGCAAGACAC AACAGAGACA
-----
901 CTGACTGTGT TTCTGTATTT GTCTGAAAAT TAGGGCCAGA CTGTTACCAC
   GACTGACACA AAGACATAAA CAGACTTTTA ATCCCGGTCT GACAATGGTG
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FIGURE 11B

951 TCCCTTAAGT TTGACCTTAG GTAACCTGGAA AGATGTCGAG CGGCTCGCTC
AGGGAATTCA AACTGGAATC CATTGACCTT TCTACAGCTC GCCGAGCGAG

1001 ACAACCAGTC GGTAGATGTC AAGAAGAGAC GTTGGGTAC CTTCTGCTCT
TGTTGGTCAG CCATCTACAG TTCTTCTCTG CAACCCAATG GAAGACGAGA

1051 GCAGAATGGC CAACCTTTAA CGTCGGATGG CCGCGAGACG GCACCTTTAA
CGTCTTACCG GTTGGAAATT GCAGCCTACC GGCCTCTGC CGTGGAAATT

1101 CCGAGACCTC ATCACCAGG TTAAGATCAA GGTCTTTTCA CCTGGCCGCG
GGCTCTGGAG TAGTGGGTCC AATTCTAGTT CCAGAAAAGT GGACCGGGCG

1151 ATGGACACCC AGACCAGGTC CCCTACATCG TGACCTGGGA AGCCTTGGCT
TACCTGTGGG TCTGTCCAG GGGATGTAGC ACTGGACCT TCGGAACCGA

1201 TTTGACCCCC CTCCCTGGGT CAAGCCCTTT GTACACCCTA AGCCTCCGCC
AAACTGGGGG GAGGGACCCA GTTCGGGAAA CATGTGGGAT TCGGAGGCGG

1251 TCCTCTTCCT CCATCCGCC CGTCTCTCCC CTTGAACCT CCTCGTTCGA
AGGAGAAGGA GGTAGCGGG GCAGAGAGGG GGAACCTGGA GGAGCAAGCT

1301 CCCCCTCTCG ATCCTCCCTT TATCCAGCCC TCACTCCTTC TCTAGGCGCC
GGGGCGGAGC TAGGAGGGA ATAGGTCCGG AGTGAGGAAG AGATCCGCGG

1351 GGCCGCTCTA GCCCATTAA ACGACTCACT ATAGGCGGAT TCGAACACCA
CCGGCGAGAT CGGGTAATTA TGCTGAGTGA TATCCCGCTA AGCTTGTGGT

1401 TGCACCATCA TCATCATCAC GTCGACTATA AAGATGAGGA CCTCGAGATG
ACGTGGTAGT AGTAGTAGTG CAGCTGATAT TTCTACTCCT GGAGCTCTAC

1451 GGCGTGATTA CGGATTCCT GCGCGTCGTG GCGCGCACCG ATCGCCCTTC
CCGCACTAAT GCCTAAGTGA CCGGCAGCAC CGGGCGTGGC TAGCGGGAAG

1501 CCAACAGTTA CGCAGCCTGA ATGGCGAATG GCGCTTTGCC TGGTTTCCGG
GGTTGTCAAT GCGTCGGACT TACCGCTTAC CGCGAAACGG ACCAAAGGCC

1551 CACCAGAAGC GGTGCCGGAA AGCTGGCTGG AGTGCGATCT TCCTGAGGCC
GTGGTCTTCG CCACGGCCTT TCGACCGACC TCACGCTAGA AGGACTCCGG

1601 GATACTGTCG TCGTCCCTC AACTGGCAG ATGCACGGTT ACGATGCGCC
CTATGACAGC AGCAGGGGAG TTTGACCGTC TACGTGCCAA TGCTACGCGG

1651 CATCTACACC AACGTGACCT ATCCCATTAC GGTCAATCCG CCGTTTGTTC
GTAGATGTGG TTGCACTGGA TAGGGTAATG CCAGTTAGGC GGCAAACAAG

1701 CCACGGAGAA TCCGACGGGT TGTTACTCGC TCACATTTAA TGTTGATGAA
GGTGCCCTCTT AGGCTGCCCA ACAATGAGCG AGTGTAATTT ACAACTACTT

1751 AGCTGGCTAC AGGAAGGCCA GACGCGAATT ATTTTGTATG GCGTTAACTC
TCGACCGATG TCCTTCCGGT CTGCGCTTAA TAAAACTAC CGCAATTGAG

1801 GGCGTTTCAT CTGTGGTGCA ACGGGCGCTG GGTGCGTTAC GGCCAGGACA
CCGCAAAGTA GACACCAGT TGCCCGCGAC CCAGCCAATG CCGGTCCTGT

1851 GTCGTTTGCC GTCTGAATTT GACCTGAGCG CATTTTACG CGCCGGAGAA
CAGCAAACGG CAGACTTAAA CTGGACTCGC GTAAAAATGC GCGGCCTCTT

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1901  AACCGCCTCG CGGTGATGGT GCTGCGCTGG AGTGACGGCA GTTATCTGGA
      TTGGCGGAGC GCCACTACCA CGACGCGACC TCACTGCCGT CAATAGACCT
-----
1951  AGATCAGGAT ATGTGGCGGA TGAGCGGCAT TTTCCGTGAC GTCTCGTTGC
      TCTAGTCCTA TACACCGCCT ACTCGCCGTA AAAGGCACTG CAGAGCAACG
-----
2001  TGCATAAACC GACTACACAA ATCAGCGATT TCCATGTTGC CACTCGCTTT
      ACGTATTTGG CTGATGTGTT TAGTCGCTAA AGGTACAACG GTGAGCGAAA
-----
2051  AATGATGATT TCAGCCGCGC TGTACTGGAG GCTGAAGTTC AGATGTGCGG
      TTACTACTAA AGTCGGCGCG ACATGACCTC CGACTTCAAG TCTACACGCC
-----
2101  CGAGTTGCGT GACTACCTAC GGGTAACAGT TTCTTTATGG CAGGGTGAAA
      GCTCAACGCA CTGATGGATG CCCATTGTCA AAGAAATACC GTCCCACTTT
-----
2151  CGCAGGTCGC CAGCGGCACC GCGCCTTTTCG GCGGTGAAAT TATCGATGAG
      GCGTCCAGCG GTCGCCGTGG CGCGGAAAGC CGCCACTTTA ATAGCTACTC
-----
2201  CGTGGTGGTT ATGCCGATCG CGTCACACTA CGTCTGAACG TCGAAAACCC
      GCACCACCAA TACGGCTAGC GCAGTGTGAT GCAGACTTGC AGCTTTTGGG
-----
2251  GAAACTGTGG AGCGCCGAAA TCCCGAATCT CTATCGTGCG GTGGTTGAAC
      CTTTGACACC TCGCGGCTTT AGGGCTTAGA GATAGCACGC CACCAACTTG
-----
2301  TGCACACCGC CGACGGCAGC CTGATTGAAG CAGAAGCCTG CGATGTCGGT
      ACGTGTGGCG GCTGCCGTGC GACTAACTTC GTCTTCGGAC GCTACAGCCA
-----
2351  TTCCGCGAGG TGCGGATTGA AAATGGTCTG CTGCTGCTGA ACGGCAAGCC
      AAGGCGCTCC ACGCCTAACT TTTACCAGAC GACGACGACT TGCCGTTTCG
-----
2401  GTTGCTGATT CGAGGCGTTA ACCGTCACGA GCATCATCCT CTGCATGGTC
      CAACGACTAA GCTCCGCAAT TGGCAGTGCT CGTAGTAGGA GACGTACCAG
-----
2451  AGGTCATGGA TGAGCAGACG ATGGTGCAGG ATATCCTGCT GATGAAGCAG
      TCCAGTACCT ACTCGTCTGC TACCACGTCC TATAGGACGA CTACTTCGTC
-----
2501  AACAACTTTA ACGCCGTGCG CTGTTTCGAT TATCCGAACC ATCCGCTGTG
      TTGTTGAAAT TGCGGCACGC GACAAGCGTA ATAGGCTTGG TAGGCGACAC
-----
2551  GTACACGCTG TGCGACCGCT ACGGCCTGTA TGTGGTGGAT GAAGCCAATA
      CATGTGCGAC ACGCTGGCGA TGCCGGACAT ACACCACCTA CTTCGGTTAT
-----
2601  TTGAAACCCA CGGCATGGTG CCAATGAATC GTCTGACCGA TGATCCGCGC
      AACTTTGGGT GCCGTACCAC GGTTACTTAG CAGACTGGCT ACTAGGCGCG
-----
2651  TGGCTACCGG CGATGAGCGA ACGCGTAACG CGAATGGTGC AGCGCGATCG
      ACCGATGGCC GCTACTCGCT TGCGCATTGC GCTTACCACG TCGCGCTAGC
-----
2701  TAATCACCCG AGTGTGATCA TCTGGTCGCT GGGGAATGAA TCAGGCCACG
      ATTAGTGGGC TCACACTAGT AGACCAGCGA CCCCTTACTT AGTCCGGTGC
-----
2751  GCGCTAATCA CGACGCGCTG TATCGCTGGA TCAAATCTGT CGATCCTTCC
      CGCGATTAGT GCTGCGCGAC ATAGCGACCT AGTTTAGACA GCTAGGAAGG
-----
2801  CGCCCGGTGC AGTATGAAGG CGGCGGAGCC GACACCACGG CCACCGATAT
      GCGGGCCACG TCATACTTCC GCCGCCTCGG CTGTGGTGCC GGTGGCTATA
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2851 TATTTGCCCCG ATGTACGCGC GCGTGGATGA AGACCAGCCC TTCCCGGCTG
ATAAACGGGC TACATGCGCG CGCACCTACT TCTGGTCGGG AAGGGCCGAC
-----
2901 TGCCGAAATG GTCCATCAAA AAATGGCTTT CGCTACCTGG AGAGACGCGC
ACGGCTTTTAC CAGGTAGTTT TTTACCGAAA GCGATGGACC TCTCTGCGCG
-----
2951 CCGCTGATCC TTTGCGAATA CGCCACGCG ATGGGTAAACA GTCTTGGCGG
GGCGACTAGG AAACGCTTAT GCGGGTGCGC TACCCATTGT CAGAACCGCC
-----
3001 TTTCGCTAAA TACTGGCAGG CGTTTCGTCA GTATCCCGT TTACAGGGCG
AAAGCGATTT ATGACCGTCC GCAAAGCAGT CATAGGGGCA AATGTCCCGC
-----
3051 GCTTCGTCTG GGA CTGGGTG GATCAGTCGC TGATTAAATA TGATGAAAAC
CGAAGCAGAC CCTGACCCAC CTAGTCAGCG ACTAATTTAT ACTACTTTTG
-----
3101 GGCAACCCGT GGTGCGCTTA CGGCGGTGAT TTTGGCGATA CGCCGAACGA
CCGTTGGGCA CCAGCCGAAT GCCGCCACTA AAACCGCTAT GCGGCTTGCT
-----
3151 TCGCCAGTTC TGTATGAACG GTCTGGTCTT TGCCGACCGC ACGCCGCATC
AGCGGTCAAG ACATACTTGC CAGACCAGAA ACGGCTGGCG TGCGGCGTAG
-----
3201 CAGCGCTGAC GGAAGCAAAA CACCAGCAGC AGTTTTTCCA GTTCCGTTTA
GTCGCGACTG CCTTCGTTTT GTGGTCGTCG TCAAAAAGGT CAAGGCAAAAT
-----
3251 TCCGGGCAAAA CCATCGAAGT GACCAGCGAA TACCTGTTCC GTCATAGCGA
AGGCCCGTTT GGTAGCTTCA CTGGTCGCTT ATGGACAAGG CAGTATCGCT
-----
3301 TAACGAGCTC CTGCACTGGA TGGTGGCGCT GGATGGTAAG CCGCTGGCAA
ATTGCTCGAG GACGTGACCT ACCACCGCGA CCTACCATTG GGCGACCGTT
-----
3351 GCGGTGAAGT GCCTCTGGAT GTCGCTCCAC AAGGTAAACA GTTGATTGAA
CGCCACTTCA CGGAGACCTA CAGCGAGGTG TTCCATTTGT CAACTAACTT
-----
3401 CTGCCTGAAC TACCGCAGCC GGAGAGCGCC GGGCAACTCT GGCTCACAGT
GACGGACTTG ATGGCGTCGG CCTCTCGCGG CCCGTTGAGA CCGAGTGTC A
-----
3451 ACGCGTAGTG CAACCGAACG CGACCGCATG GTCAGAAGCC GGGCACATCA
TGCGCATCAC GTTGGCTTGC GCTGGCGTAC CAGTCTTCGG CCCGTGTAGT
-----
3501 GCGCCTGGCA GCAGTGGCGT CTGGCGGAAA ACCTCAGTGT GACGCTCCCC
CGCGGACCGT CGTCACCGCA GACCGCCTTT TGGAGTCACA CTGCGAGGGG
-----
3551 GCGCGTCCC ACGCCATCCC GCATCTGACC ACCAGCGAAA TGGATTTTTG
CGGCGCAGGG TGCGGTAGGG CGTAGACTGG TGGTCGCTTT ACCTAAAAAC
-----
3601 CATCGAGCTG GGTAATAAGC GTTGGCAATT TAACCGCCAG TCAGGCTTTC
GTAGCTCGAC CCATTATTG CAACCGTTAA ATTGGCGGTC AGTCCGAAAG
-----
3651 TTTCACAGAT GTGGATTGGC GATAAAAAAC AACTGCTGAC GCCGCTGCGC
AAAGTGTCTA CACCTAACCG CTATTTTTTG TTGACGACTG CGGCGACGCG
-----
3701 GATCAGTTCA CCCGTGCACC GCTGGATAAC GACATTGGCG TAAGTGAAGC
CTAGTCAAGT GGGCAGTG GACCTATTG CTGTAACCGC ATCACTTCG
-----
3751 GACCCGCATT GACCCTAACG CCTGGGTCGA ACGCTGGAAG GCGGCGGGCC
CTGGGCGTAA CTGGGATTGC GGACCCAGCT TGCGACCTTC CGCCGCCCCG
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3801 ATTACCAGGC CGAAGCAGCG TTGTTGCAGT GCACGGCAGA TACACTTGCT
TAATGGTCCG GCTTCGTGCG AACAACTCA CGTGCCGTCT ATGTGAACGA

3851 GATGCGGTGC TGATTACGAC CGCTCACGCG TGGCAGCATC AGGGGAAAAC
CTACGCCACG ACTAATGCTG GCGAGTGCGC ACCGTCGTAG TCCCCTTTTG

3901 CTTATTTATC AGCCGAAAAA CCTACCGGAT TGATGGTAGT GGTCAAATGG
GAATAAATAG TCGGCCTTTT GGATGGCCTA ACTACCATCA CCAGTTTACC

3951 CGATTACCGT TGATGTTGAA GTGGCGAGCG ATACACCGCA TCCGGCGCGG
GCTAATGGCA ACTACAACCT CACCGCTCGC TATGTGGCGT AGGCCGCGCC

4001 ATTGGCCTGA ACTGCCAGCT GGCGCAGGTA GCAGAGCGGG TAAACTGGCT
TAACCGGACT TGACGGTCGA CCGCGTCCAT CGTCTCGCCC ATTTGACCGA

4051 CGGATTAGGG CCGCAAGAAA ACTATCCCGA CCGCCTTACT GCCGCCTGTT
GCCTAATCCC GCGGTTCTTT TGATAGGGCT GCGGGAATGA CGCGGACAA

4101 TTGACCGCTG GGATCTGCCA TTGTCAGACA TGTATACCCC GTACGTCTTC
AACTGGCGAC CCTAGACGGT AACAGTCTGT ACATATGGGG CATGCAGAAG

4151 CCGAGCGAAA ACGGTCTGCG CTGCGGGACG CGCGAATTGA ATTATGGCCC
GGCTCGCTTT TGCCAGACGC GACGCCCTGC GCGCTTAACT TAATACCGGG

4201 ACACCAGTGG CGCGGCGACT TCCAGTTCAA CATCAGCCGC TACAGTCAAC
TGTGGTCACC GCGCCGCTGA AGGTCAAGTT GTAGTCGGCG ATGTCAGTTG

4251 AGCAACTGAT GGAACCAGC CATCGCCATC TGCTGCACGC GGAAGAAGGC
TCGTTGACTA CCTTTGGTCG GTAGCGGTAG ACGACGTGCG CCTTCTTCCG

4301 ACATGGCTGA ATATCGACGG TTTCCATATG GGGATTGGTG GCGACGACTC
TGTACCGACT TATAGCTGCC AAAGGTATAC CCCTAACCAC CGCTGCTGAG

4351 CTGGAGCCCG TCAGTATCGG CGGAATTCCA GCTGAGCGCC GGTGCTTACC
GACCTCGGGC AGTCATAGCC GCCTTAAGGT CGACTCGGG CCAGCGATGG

4401 ATTACCAGTT GGTCTGGTGT CAAAAAAGAT CTGGAGGTGG TGGCAGCAGG
TAATGGTCAA CCAGACCACA GTTTTTTCTA GACCTCCACC ACCGTCGTCC

4451 CCTTGGCGCG CCGGATCCTT AATTAACAAT TGACCGGTAA TAATAGGTAG
GGAACCGCGC GGCCTAGGAA TTAATTGTTA ACTGGCCATT ATTATCCATC

4501 ATAAGTGACT GATTAGATGC ATTGATCCCT CGACCAATTC CGGTTATTTT
TATTCAGTGA CTAATCTACG TAACTAGGGA GCTGGTTAAG GCCAATAAAA

4551 CCACCATATT GCCGTCTTTT GGCAATGTGA GGGCCCGGAA ACCTGGCCCT
GGTGGTATAA CGGCAGAAAA CCGTTACACT CCCGGGCCTT TGGACCGGGA

4601 GTCTTCTTGA CGAGCATTC TAGGGGTCTT TCCCCTCTCG CCAAAGGAAT
CAGAAGAACT GCTCGTAAGG ATCCCCAGAA AGGGGAGAGC GGTTCCTTA

4651 GCAAGGTCTG TTGAATGTCG TGAAGGAAGC AGTTCCTCTG GAAGCTTCTT
CGTTCAGAC AACTTACAGC ACTTCCTTCG TCAAGGAGAC CTTCGAAGAA

4701 GAAGACAAAC AACGTCTGTA GCGACCCTTT GCAGGCAGCG GAACCCCCA
CTTCTGTTTG TTGCAGACAT CGCTGGGAAA CGTCCGTCGC CTTGGGGGGT

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4751 CCTGGCGACA GGTGCCTCTG CGGCCAAAAG CCACGTGTAT AAGATACACC
    GGACCGCTGT CCACGGAGAC GCCGGTTTTC GGTGCACATA TTCTATGTGG
-----
4801 TGCAAAGGCG GCACAACCCC AGTGCCACGT TGTGAGTTGG ATAGTTGTGG
    ACGTTTCCGC CGTGTGGGG TCACGGTGCA ACACTCAACC TATCAACACC
-----
4851 AAAGAGTCAA ATGGCTCTCC TCAAGCGTAT TCAACAAGGG GCTGAAGGAT
    TTTCTCAGTT TACCGAGAGG AGTTCGCATA AGTTGTTCCTC CGACTTCCTA
-----
4901 GCCCAGAAGG TACCCCATTTG TATGGGATCT GATCTGGGGC CTCGGTGCAC
    CGGGTCTTCC ATGGGGTAAC ATACCCTAGA CTAGACCCCG GAGCCACGTG
-----
4951 ATGCTTTACA TGTGTTTAGT CGAGGTAAAT AAACGTCTAG GCCCCCCGAA
    TACGAAATGT ACACAAATCA GCTCCAATTT TTTGCAGATC CGGGGGGCTT
-----
5001 CCACGGGGAC GTGGTTTTTC TTTGAAAAAC ACGATGATAA TACCATGATT
    GGTGCCCCTG CACCAAAAGG AAACTTTTTG TGCTACTATT ATGGTACTAA
-----
5051 GAACAAGATG GATTGCACGC AGGTTCTCCG GCCGCTTGGG TGGAGAGGCT
    CTTGTTCTAC CTAACGTGCG TCCAAGAGGC CGGCGAACCC ACCTCTCCGA
-----
5101 ATTCGGCTAT GACTGGGCAC AACAGACAAT CGGCTGCTCT GATGCCGCCG
    TAAGCCGATA CTGACCCGTG TTGTCTGTTA GCCGACGAGA CTACGGCGGC
-----
5151 TGTTCGGGCT GTCAGCGCAG GGGCGCCCGG TTCTTTTTGT CAAGACCGAC
    ACAAGGCCGA CAGTCGCGTC CCCGCGGGCC AAGAAAAACA GTTCTGGCTG
-----
5201 CTGTCCGGTG CCCTGAATGA ACTGCAGGAC GAGGCAGCGC GGCTATCGTG
    GACAGGCCAC GGGACTTACT TGACGTCCTG CTCCGTCGCG CCGATAGCAC
-----
5251 GCTGGCCACG ACGGGCGTTC CTTGCGCAGC TGTGCTCGAC GTTGTCACCTG
    CGACCGGTGC TGCCCGCAAG GAACGCGTCG ACACGAGCTG CAACAGTGAC
-----
5301 AAGCGGGAAG GGACTGGCTG CTATTGGGCG AAGTGCCGGG GCAGGATCTC
    TTCGCCCTTC CCTGACCGAC GATAACCCGC TTCACGGCCC CGTCCTAGAG
-----
5351 CTGTCATCTC ACCTTGCTCC TGCCGAGAAA GTATCCATCA TGGCTGATGC
    GACAGTAGAG TGGAACGAGG ACGGCTCTTT CATAGGTAGT ACCGACTACG
-----
5401 AATGCGGCGG CTGCATACGC TTGATCCGGC TACCTGCCCA TTCGACCACC
    TTACGCCGCC GACGTATGCG AACTAGGCCG ATGGACGGGT AAGCTGGTGG
-----
5451 AAGCGAAACA TCGCATCGAG CGAGCACGTA CTCGGATGGA AGCCGGTCTT
    TTCGCTTTGT AGCGTAGCTC GCTCGTGCAT GAGCCTACCT TCGGCCAGAA
-----
5501 GTCGATCAGG ATGATCTGGA CGAAGAGCAT CAGGGGCTCG CGCCAGCCGA
    CAGCTAGTCC TACTAGACCT GCTTCTCGTA GTCCCCGAGC GCGGTGCGCT
-----
5551 ACTGTTTCGCC AGGCTCAAGG CGCGCATGCC CGACGGCGAG GATCTCGTCG
    TGACAAGCGG TCCGAGTTCC GCGCGTACGG GCTGCCGCTC CTAGAGCAGC
-----
5601 TGACCCATGG CGATGCCTGC TTGCCGAATA TCATGGTGGG AAATGGCCGC
    ACTGGGTACC GCTACGGACG AACGGCTTAT AGTACCACCT TTTACCGGCG
-----
5651 TTTTCTGGAT TCATCGACTG TGGCCGGCTG GGTGTGGCGG ACCGCTATCA
    AAAAGACCTA AGTAGCTGAC ACCGGCCGAC CCACACCGCC TGGCGATAGT

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5701  GGACATAGCG TTGGCTACCC GTGATATTGC TGAAGAGCTT GGCGGCGAAT
      CCTGTATCGC AACCGATGGG CACTATAACG ACTTCTCGAA CCGCCGCTTA
-----
5751  GGGCTGACCG CTTCTCTCGTG CTTTACGGTA TCGCCGCTCC CGATTTCGAG
      CCCGACTGGC GAAGGAGCAC GAAATGCCAT AGCGGCGAGG GCTAAGCGTC
-----
5801  CGCATCGCCT TCTATCGCCT TCTTGACGAG TTCTTCTGAG CGGGACTCTG
      GCGTAGCGGA AGATAGCGGA AGAACTGCTC AAGAAGACTC GCCCTGAGAC
-----
5851  GGGTTCGCAT CGATAAAATA AAAGATTTTA TTTAGTCTCC AGAAAAAGGG
      CCCAAGCGTA GCTATTTTAT TTTCTAAAT AAATCAGAGG TCTTTTCC
-----
5901  GGAATGAAA GACCCACCT GTAGGTTTGG CAAGCTAGCT TAAGTAACGC
      CCCTTACTTT CTGGGGTGA CATCCAAACC GTTCGATCGA ATTCAATGCG
-----
5951  CATTTTGCAA GGCATGGAAA AATACATAAC TGAGAATAGA GAAGTTCAGA
      GTAAAACGTT CCGTACCTTT TTATGTATTG ACTCTTATCT CTTCAAGTCT
-----
6001  TCAAGGTCAG GAACAGATGG AACAGCTGAA TATGGGCCAA ACAGGATATC
      AGTTCCAGTC CTTGTCTACC TTGTGACTT ATACCCGGTT TGTCTATAG
-----
6051  TGTGGTAAGC AGTTCCTGCC CCGGCTCAGG GCCAAGAACA GATGGAACAG
      ACACCATTTC TCAAGGACGG GGCCGAGTCC CGGTTCTTGT CTACCTTGT
-----
6101  CTGAATATGG GCCAAACAGG ATATCTGTGG TAAGCAGTTC CTGCCCCGGC
      GACTTATACC CGGTTTGTCC TATAGACACC ATTCGTCAAG GACGGGGCCG
-----
6151  TCAGGGCCAA GAACAGATGG TCCCCAGATG CGGTCCAGCC CTCAGCAGTT
      AGTCCCGTT CTTGTCTACC AGGGGTCTAC GCCAGGTCGG GAGTCGTCAA
-----
6201  TCTAGAGAAC CATCAGATGT TTCCAGGGTG CCCAAGGAC CTGAAATGAC
      AGATCTCTTG GTAGTCTACA AAGGTCCAC GGGGTTCTG GACTTTACTG
-----
6251  CCTGTGCCTT ATTTGAACTA ACCAATCAGT TCGCTTCTCG CTTCTGTTCG
      GGACACGGAA TAACTTGAT TGTTAGTCA AGCGAAGAGC GAAGACAAGC
-----
6301  CGCGCTTCTG CTCCCCGAGC TCAATAAAAG AGCCACAAC CCCTCACTCG
      GCGCGAAGAC GAGGGGCTCG AGTTATTTTC TCGGGTGTG GGGAGTGAGC
-----
6351  GGGCGCCAGT CCTCCGATTG ACTGAGTCGC CCGGGTACCC GTGTATCCAA
      CCCGCGTCA GGAGGCTAAC TGACTCAGCG GGCCCATGGG CACATAGGTT
-----
6401  TAAACCCTCT TGCAGTTGCA TCCGACTTGT GGTCTCGCTG TTCCTTGGA
      ATTTGGGAGA ACGTCAACGT AGGCTGAACA CCAGAGCGAC AAGGAACCT
-----
6451  GGGTCTCCTC TGAGTGATTG ACTACCGTC AGCGGGGTC TTTCATTAT
      CCCAGAGGAG ACTCACTAAC TGATGGGCAG TCGCCCCAG AAAGTAAGTA
-----
6501  GCAGCATGTA TCAAAATTA TTTGGTTTT TTTCTTAAGT ATTTACATTA
      CGTCGTACAT AGTTTTAATT AAACCAAAA AAAGAATTCA TAAATGTAAT
-----
6551  AATGGCCATA GTTGCAATTA TGAATCGGCC AACGCGCGGG GAGAGGCGGT
      TTACCGGTAT CAACGTAATT ACTTAGCCGG TTGCGCGCCC CTCTCCGCCA
-----
6601  TTGCGTATTG GCGCTCTTCC GCTTCCTCGC TCACTGACTC GCTGCGCTCG
      AACGCATAAC CGCGAGAAGG CGAAGGAGCG AGTGACTGAG CGACGCGAGC
-----

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6651 GTCGTTCCGGC TGCGGCGAGC GGTATCAGCT CACTCAAAGG CGGTAATACG
CAGCAAGCCG ACGCCGCTCG CCATAGTCGA GTGAGTTTCC GCCATTATGC

6701 GTTATCCACA GAATCAGGGG ATAACGCAGG AAAGAACATG TGAGCAAAAG
CAATAGGTGT CTTAGTCCCC TATTGCGTCC TTTCTTGATC ACTCGTTTTT

6751 GCCAGCAAAA GGCCAGGAAC CGTAAAAAGG CCGCGTTGCT GGCGTTTTTC
CGGTCGTTTT CCGGTCCTTG GCATTTTTTC GCGCAACGA CCGCAAAAAG

6801 CATAGGCTCC GCCCCCTGA CGAGCATCAC AAAAATCGAC GCTCAAGTCA
GTATCCGAGG CGGGGGGACT GCTCGTAGTG TTTTAGCTG CGAGTTCAGT

6851 GAGGTGGCGA AACCCGACAG GACTATAAAG ATACCAGGCG TTTCCCCCTG
CTCCACCCTG TTGGGCTGTC CTGATATTTT TATGGTCCGC AAAGGGGGAC

6901 GAAGCTCCCT CGTGCGCTCT CCTGTTCCGA CCCTGCCGCT TACCGGATAC
CTTCGAGGGA GCACGCGAGA GGACAAGGCT GGGACGGCGA ATGGCCTATG

6951 CTGTCCGCCT TTCTCCCTTC GGAAGCGTG GCGCTTTCTC ATAGCTCACG
GACAGGCGGA AAGAGGGAAG CCCTTCGCAC CGCGAAAGAG TATCGAGTGC

7001 CTGTAGGTAT CTCAGTTCGG TGTAGGTCGT TCGCTCCAAG CTGGGCTGTG
GACATCCATA GAGTCAAGCC ACATCCAGCA AGCGAGGTTC GACCCGACAC

7051 TGCACGAACC CCCCGTTCAG CCCGACCGCT GCGCCTTATC CGGTAACAT
ACGTGCTTGG GGGGCAAGTC GGGCTGGCGA CGCGGAATAG GCCATTGATA

7101 CGTCTTGAGT CCAACCCGGT AAGACACGAC TTATCGCCAC TGGCAGCAGC
GCAGAACTCA GGTGGGGCCA TTCTGTGCTG AATAGCGGTG ACCGTCGTCG

7151 CACTGGTAAC AGGATTAGCA GAGCGAGGTA TGTAGGCGGT GCTACAGAGT
GTGACCATTG TCCTAATCGT CTCGCTCCAT ACATCCGCCA CGATGTCTCA

7201 TCTTGAAGTG GTGGCCTAAC TACGGCTACA CTAGAAGAAC AGTATTTGGT
AGAACTTCAC CACCGGATTG ATGCCGATGT GATCTTCTTG TCATAAACCA

7251 ATCTGCGCTC TGCTGAAGCC AGTTACCTTC GGAAGAAAGAG TTGGTAGCTC
TAGACGCGAG ACGACTTCGG TCAATGGAAG CCTTTTCTC AACCATCGAG

7301 TTGATCCGGC AAACAAACCA CCGCTGGTAG CCGTGGTTTT TTTGTTTGCA
AACTAGGCCG TTTGTTTGGT GCGGACCATC GCCACAAAA AAACAAACGT

7351 AGCAGCAGAT TACGCGCAGA AAAAAAGGAT CTCAAGAAGA TCCTTTGATC
TCGTCGTCTA ATGCGCGTCT TTTTTCCTA GAGTTCTTCT AGGAAACTAG

7401 TTTTCTACGG GGTCTGACGC TCAGTGGAAC GAAAACCTAC GTTAAGGGAT
AAAAGATGCC CCAGACTGCG AGTCACCTTG CTTTGTAGTG CAATTCCTTA

7451 TTTGGTCATG AGATTATCAA AAAGGATCTT CACCTAGATC CTTTTCGCGC
AAACCAGTAC TCTAATAGTT TTTCTAGAA GTGGATCTAG GAAAACGCCG

7501 CGCAAATCAA TCTAAAGTAT ATATGAGTAA ACTTGGTCTG ACAGTTACCA
GCGTTTAGTT AGATTTCATA TATACTCATT TGAACCAGAC TGTCAATGGT

7551 ATGCTTAATC AGTGAGGCAC CTATCTCAGC GATCTGTCTA TTTGTTTCAT
TACGAATTAG TCACTCCGTG GATAGAGTCG CTAGACAGAT AAAGCAAGTA

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7601  CCATAGTTGC CTGACTCCCC GTCGTGTAGA TAACTACGAT ACGGGAGGGC
      GGTATCAACG GACTGAGGGG CAGCACATCT ATTGATGCTA TGCCCTCCCG
-----
7651  TTACCATCTG GCCCCAGTGC TGCAATGATA CCGCGAGACC CACGCTCACC
      AATGGTAGAC CGGGGTCACG ACGTTACTAT GCGGCTCTGG GTGCGAGTGG
-----
7701  GGCTCCAGAT TTATCAGCAA TAAACCAGCC AGCCGGAAGG GCCGAGCGCA
      CCGAGGTCTA AATAGTCGTT ATTTGGTCGG TCGGCCTTCC CGGCTCGCGT
-----
7751  GAAGTGGTCC TGCAACTTTA TCCGCCTCCA TCCAGTCTAT TAATTGTTGC
      CTTACCAGG ACGTTGAAAT AGGCGGAGGT AGGTCAGATA ATTAACAACG
-----
7801  CGGGAAGCTA GAGTAAGTAG TTCGCCAGTT AATAGTTTGC GCAACGTTGT
      GCCCTTCGAT CTCATTCATC AAGCGGTCAA TTATCAAACG CGTTGCAACA
-----
7851  TGCCATTGCT ACAGGCATCG TGGTGTACG CTCGTCGTTT GGTATGGCTT
      ACGGTAACGA TGTCCGTAGC ACCACAGTGC GAGCAGCAA CCATACCGAA
-----
7901  CATTGAGCTC CGGTTCCCAA CGATCAAGGC GAGTTACATG ATCCCCCATG
      GTAAGTCGAG GCCAAGGGTT GCTAGTTCCG CTCAATGTAC TAGGGGGTAC
-----
7951  TTGTGCAAAA AAGCGGTTAG CTCCTTCGGT CCTCCGATCG TTGTCAGAAG
      AACACGTTTT TTCGCCAATC GAGGAAGCCA GGAGGCTAGC AACAGTCTTC
-----
8001  TAAGTTGGCC GCAGTGTTAT CACTCATGGT TATGGCAGCA CTGCATAATT
      ATTCAACCGG CGTCACAATA GTGAGTACCA ATACCGTCGT GACGTATTAA
-----
8051  CTCTTACTGT CATGCCATCC GTAAGATGCT TTTCTGTGAC TGGTGAGTAC
      GAGAATGACA GTACGGTAGG CATTCTACGA AAAGACACTG ACCACTCATG
-----
8101  TCAACCAAGT CATTCTGAGA ATAGTGATG CGGCGACCGA GTTGCTCTTG
      AGTTGGTTCA GTAAGACTCT TATCACATAC GCGCTGGCT CAACGAGAAC
-----
8151  CCCGGCGTCA ATACGGGATA ATACCGCGCC ACATAGCAGA ACTTTAAAAG
      GGGCCGCGAGT TATGCCCTAT TATGGCGCGG TGTATCGTCT TGAAATTTTC
-----
8201  TGCTCATCAT TGAAAAACGT TCTTCGGGGC GAAAACTCTC AAGGATCTTA
      ACGAGTAGTA ACCTTTTGCA AGAAGCCCCG CTTTGTAGAG TTCCTAGAAT
-----
8251  CCGCTGTTGA GATCCAGTTC GATGTAACCC ACTCGTGCAC CCAACTGATC
      GGCACAACT CTAGGTCAAG CTACATTGGG TGAGCACGTG GGTGACTAG
-----
8301  TTCAGCATCT TTTACTTTCA CCAGCGTTTC TGGGTGAGCA AAAACAGGAA
      AAGTCGTAGA AAATGAAAGT GGTCGCAAAG ACCCACTCGT TTTGTCTCTT
-----
8351  GGCAAAATGC CGCAAAAAAG GGAATAAGGG CGACACGGAA ATGTTGAATA
      CCGTTTTACG GCGTTTTTTC CTTATTCCC GCTGTGCCTT TACAACCTAT
-----
8401  CTCATACTCT TCCTTTTTC AATTATTGA AGCATTATC AGGGTTATTG
      GAGTATGAGA AGGAAAAAGT TATAATAACT TCGTAAATAG TCCCAATAAC
-----
8451  TCTCATGAGC GGATACATAT TTGAATGTAT TTAGAAAAAT AAACAAATAG
      AGAGTACTCG CCTATGTATA AACTTACATA AATCTTTTTA TTTGTTTATC
-----
8501  GGGTTCCGCG CACATTTC
      CCCAAGGCGC GTGTAAAG

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03759453.01601
FIG. 12A

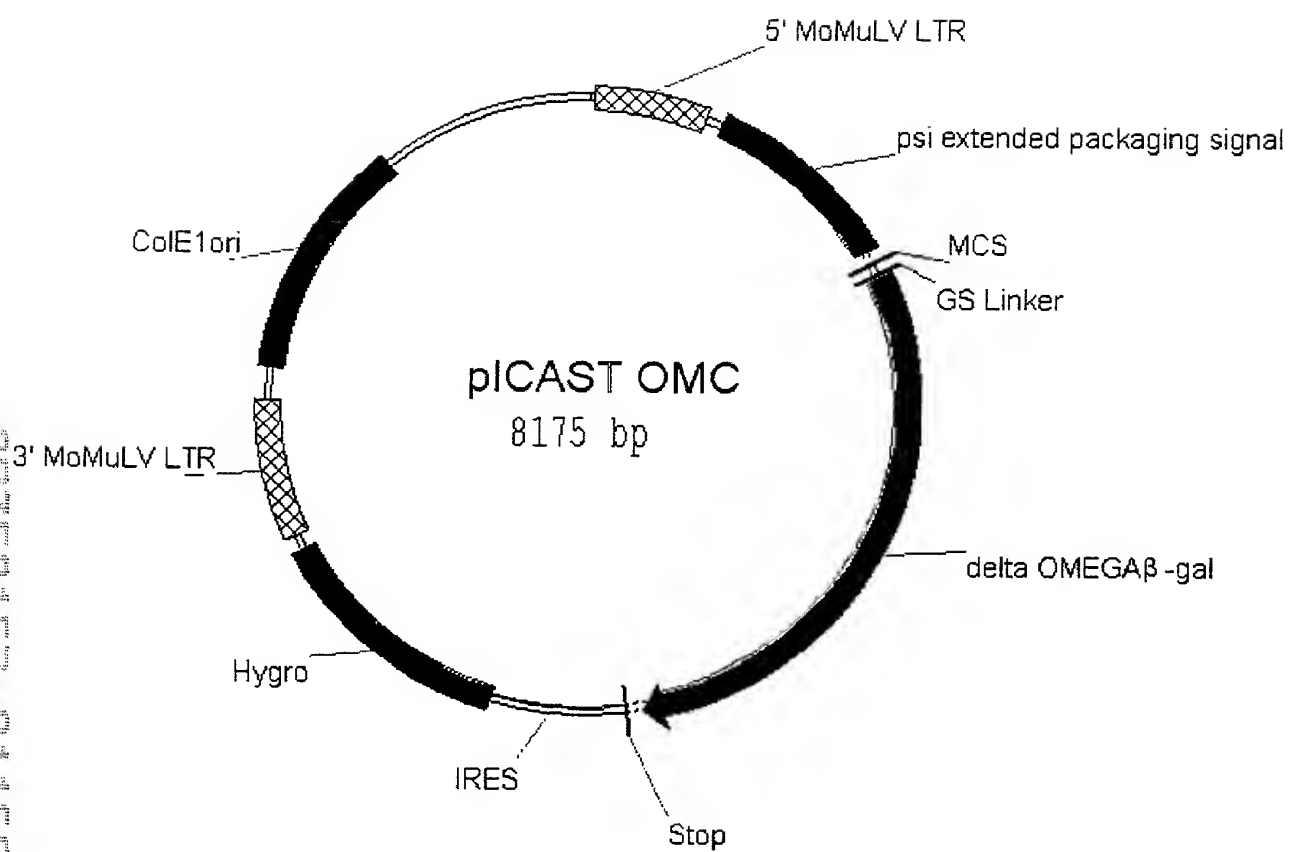


Figure 12A

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1  CTGCAGCCTG AATATGGGCC AAACAGGATA TCTGTGGTAA GCAGTTCCTG
   GACGTCGGAC TTATACCCGG TTTGTCCTAT AGACACCATT CGTCAAGGAC
-----
51  CCCC GGCTCA GGGCCAAGAA CAGATGGAAC AGCTGAATAT GGGCCAAACA
   GGGGCCGAGT CCCGGTTCTT GTCTACCTTG TCGACTTATA CCCGGTTTGT
-----
101 GGATATCTGT GGTAAGCAGT TCCTGCCCCG GCTCAGGGCC AAGAACAGAT
   CCTATAGACA CCATTTCGTCA AGGACGGGGC CGAGTCCCGG TTCTTGTCTA
-----
151 GGTCCCCAGA TGCGGTCCAG CCCTCAGCAG TTTCTAGAGA ACCATCAGAT
   CCAGGGGTCT ACGCCAGGTC GGGAGTCGTC AAAGATCTCT TGGTAGTCTA
-----
201 GTTTCAGGG TGCCCAAGG ACCTGAAATG ACCCTGTGCC TTATTTGAAC
   CAAAGGTCCC ACGGGGTTC TGGACTTTAC TGGGACACGG AATAAACTTG
-----
251 TAACCAATCA GTTCGCTTCT CGCTTCTGTT CGCGCGCTTC TGCTCCCCGA
   ATTGGTTAGT CAAGCGAAGA GCGAAGACAA GCGCGCGAAG ACGAGGGGCT
-----
301 GCTCAATAAA AGAGCCCACA ACCCTCACT CGGGGCGCCA GTCCTCCGAT
   CGAGTTATTT TCTCGGGTGT TGGGGAGTGA GCCCCGCGGT CAGGAGGCTA
-----
351 TGA CTGAGTC GCCCGGTAC CCGTGTATCC AATAAACCTT CTTGCAGTTG
   ACTGACTCAG CGGGCCCATG GGCACATAGG TTATTTGGGA GAACGTCAAC
-----
401 CATCCGACTT GTGGTCTCGC TGTTCTTGG GAGGGTCTCC TCTGAGTGAT
   GTAGGCTGAA CACCAGAGCG ACAAGGAACC CTCCCAGAGG AGACTCACTA
-----
451 TGACTACCCG TCAGCGGGGG TCTTTCATTT GGGGGCTCGT CCGGGATCGG
   ACTGATGGGC AGTCGCCCCC AGAAAGTAAA CCCCCGAGCA GGCCCTAGCC
-----
501 GAGACCCCTG CCCAGGGACC ACCGACCAC CACCGGGAGG CAAGCTGGCC
   CTCTGGGGAC GGGTCCCTGG TGGCTGGGTG GTGGCCCTCC GTTCGACCGG
-----
551 AGCAACTTAT CTGTGTCTGT CCGATTGTCT AGTGTCTATG ACTGATTTTA
   TCGTTGAATA GACACAGACA GGCTAACAGA TCACAGATAC TGACTAAAT
-----
601 TGCGCCTGCG TCGGTACTAG TTAGCTAACT AGCTCTGTAT CTGGCGGACC
   ACGCGGACGC AGCCATGATC AATCGATTGA TCGAGACATA GACCGCTGG
-----
651 CGTGGTGGAA CTGACGAGTT CTGAACACCC GGCCGCAACC CTGGGAGACG
   GCACCACCTT GACTGCTCAA GACTTGTGGG CCGGCGTTGG GACCTCTGC
-----
701 TCCCAGGGAC TTTGGGGGCC GTTTTGTGG CCCGACCTGA GGAAGGGAGT
   AGGGTCCCTG AAACCCCGG CAAAAACACC GGGCTGGACT CCTTCCCTCA
-----
751 CGATGTGGAA TCCGACCCCG TCAGGATATG TGGTCTGGT AGGAGACGAG
   GCTACACCTT AGGCTGGGGC AGTCCTATAC ACCAAGACCA TCCTCTGCTC
-----
801 AACCTAAAAC AGTTCCCGCC TCCGTCTGAA TTTTGTCTT CGGTTTGGAA
   TTGGATTTTG TCAAGGGCGG AGGCAGACTT AAAAACGAAA GCCAAACCTT
-----
851 CCGAAGCCGC GCGTCTTGTC TGCTGCAGCA TCGTCTGTG TTGTCTCTGT
   GGCTTCGGCG CGCAGAACAG ACGACGTCGT AGCAAGACAC AACAGAGACA
-----
901 CTGACTGTGT TTCTGTATTT GTCTGAAAAT TAGGGCCAGA CTGTTACCAC
   GACTGACACA AAGACATAAA CAGACTTTTA ATCCCGGTCT GACAATGGTG
-----

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FIGURE 12B

951 TCCCTTAAGT TTGACCTTAG GTAACCTGGAA AGATGTCGAG CGGCTCGCTC
AGGGAATTCA AACTGGAATC CATTGACCTT TCTACAGCTC GCCGAGCGAG

1001 ACAACCAGTC GGTAGATGTC AAGAAGAGAC GTTGGGTAC CTTCTGCTCT
TGTGGTCAG CCATCTACAG TTCTTCTCTG CAACCAATG GAAGACGAGA

1051 GCAGAATGGC CAACCTTTAA CGTCGGATGG CCGCGAGACG GCACCTTTAA
CGTCTTACCG GTTGGAATT GCAGCCTACC GGCCTCTGC CGTGGAATT

1101 CCGAGACCTC ATCACCAGG TTAAGATCAA GGTCTTTTCA CCTGGCCCGC
GGCTCTGGAG TAGTGGGTCC AATTCTAGTT CCAGAAAAGT GGACCGGGCG

1151 ATGGACACCC AGACCAGGTC CCCTACATCG TGACCTGGGA AGCCTTGGCT
TACCTGTGGG TCTGGTCCAG GGGATGTAGC ACTGGACCTC TCGGAACCGA

1201 TTTGACCCCC CTCCCTGGGT CAAGCCCTTT GTACACCCTA AGCCTCCGCC
AAACTGGGGG GAGGGACCCA GTTCGGGAAA CATGTGGGAT TCGGAGGCGG

1251 TCCTCTTCCT CCATCCGCCC CGTCTCTCCC CCTTGAACCT CCTCGTTCGA
AGGAGAAGGA GGTAGGCGGG GCAGAGAGGG GGAACCTTGA GGAGCAAGCT

1301 CCGCGCTCG ATCCTCCCTT TATCCAGCCC TCACTCCTTC TCTAGGCGCC
GGGCGGAGC TAGGAGGGAA ATAGGTCGGG AGTGAGGAAG AGATCCGCGG

1351 GGCCGCTCTA GCCCATTAAAT ACGACTCACT ATAGGGCGAT TCGAATCAGG
CCGCGGAGAT CGGGTAATTA TGCTGAGTGA TATCCCGCTA AGCTTAGTCC

1401 CCTTGGCGCG CCGGATCCTT AATTAAGCGC AATTGGGAGG TGGCGGTAGC
GGAACCGCGC GGCCTAGGAA TTAATTCGCG TTAACCCTCC ACCGCCATCG

1451 CTCGAGATGG GCGTGATTAC GGATTCACCTG GCCGTCGTTT TACAACGTCG
GAGCTCTACC CGCACTAATG CCTAAGTGAC CGGCAGCAA ATGTTGCAGC

1501 TGA CTGGGAA AACCTGGCG TTACCCAACT TAATCGCCTT GCAGCACATC
ACTGACCTT TTGGGACCGC AATGGGTGA ATTAGCGGAA CGTCGTGTAG

1551 CCCCTTTTCG CAGCTGGCGT AATAGCGAAG AGGCCCGCAC CGATCGCCCT
GGGAAAGCG GTCGACCGCA TTATCGCTTC TCCGGGCGTG GCTAGCGGGA

1601 TCCCAACAGT TACGAGCCT GAATGGCGAA TGGCGCTTTG CCTGGTTTCC
AGGGTTGTCA ATGCGTCGGA CTTACCGCTT ACCGCGAAAC GGACCAAAGG

1651 GGCACCAGAA GCGGTGCCGG AAAGCTGGCT GGAGTGCGAT CTTCTGAGG
CCGTGGTCTT CGCCACGGCC TTTCGACCGA CCTCACGCTA GAAGGACTCC

1701 CCGATACTGT CGTCGTCCCC TCAAACCTGGC AGATGCACGG TTACGATGCG
GGCTATGACA GCAGCAGGGG AGTTTGACCG TCTACGTGCC AATGCTACGC

1751 CCCATCTACA CCAACGTGAC CTATCCCAT TACGGTCAATC CGCCGTTTGT
GGGTAGATGT GGTGCACTG GATAGGTAA TGCCAGTTAG GCGGCAAACA

1801 TCCACGGAG AATCCGACGG GTTGTTACTC GTCACATTT AATGTTGATG
AGGGTGCCTC TTAGGCTGCC CAACAATGAG CGAGTGATAA TTACAACTAC

1851 AAAGCTGGCT ACAGGAAGGC CAGACGCGAA TTATTTTGA TGGCGTTAAC
TTTCGACCGA TGTCTTCCG GTCTGCGCTT AATAAAACT ACCGCAATTG

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1901 TCGGCGTTTC ATCTGTGGTG CAACGGGCGC TGGGTGCGTT ACGGCCAGGA
      AGCCGCAAAG TAGACACCAC GTTGCCCGCG ACCCAGCCAA TGCCGGTCCT
-----
1951 CAGTCGTTTG CCGTCTGAAT TTGACCTGAG CGCATTTTTA CGCGCCGGAG
      GTCAGCAAAC GGCAGACTTA AACTGGACTC GCGTAAAAAT GCGCGGCCTC
-----
2001 AAAACCGCCT CGCGGTGATG GTGCTGCGCT GGAGTGACGG CAGTTATCTG
      TTTTGGCGGA GCGCCACTAC CACGACGCGA CCTCACTGCC GTCAATAGAC
-----
2051 GAAGATCAGG ATATGTGGCG GATGAGCGGC ATTTTCCGTG ACGTCTCGTT
      CTCTAGTCC TATACACCGC CTACTCGCCG TAAAAGGCAC TGCAGAGCAA
-----
2101 GCTGCATAAA CCGACTACAC AAATCAGCGA TTTCCATGTT GCCACTCGCT
      CGACGTATTT GGCTGATGTG TTTAGTCGCT AAAGGTACAA CGGTGAGCGA
-----
2151 TTAATGATGA TTTTCAGCCGC GCTGTACTGG AGGCTGAAGT TCAGATGTGC
      AATTACTACT AAAGTCGGCG CGACATGACC TCCGACTTCA AGTCTACAG
-----
2201 GCGGAGTTGC GTGACTACCT ACGGGTAACA GTTTCTTTAT GGCAGGGTGA
      CCGCTCAACG CACTGATGGA TGCCCATTTGT CAAAGAAATA CCGTCCCACT
-----
2251 AACGCAGGTC GCCAGCGGCA CCGCGCCTTT CGGCGGTGAA ATTATCGATG
      TTGCGTCCAG CCGTCGCCGT GGCGCGGAAA GCCGCCACTT TAATAGCTAC
-----
2301 AGCGTGGTGG TTATGCCGAT CGCGTCACAC TACGTCTGAA CGTCGAAAAC
      TCGCACCACC AATACGGCTA GCGCAGTGTG ATGCAGACTT GCAGCTTTTG
-----
2351 CCGAAACTGT GGAGCGCCGA AATCCCGAAT CTCTATCGTG CGGTGGTTGA
      GGCTTTGACA CCTCGCGGCT TTAGGGCTTA GAGATAGCAC GCCACCAACT
-----
2401 ACTGCACACC GCCGACGGCA CGCTGATTGA AGCAGAAGCC TGCGATGTGC
      TGACGTGTGG CGGCTGCCGT GCGACTAACT TCGTCTTCGG ACGCTACAGC
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2451 GTTTCCGCGA GGTGCGGATT GAAAATGGTC TGCTGCTGCT GAACGGCAAG
      CAAAGGCGCT CCACGCCTAA CTTTTACCAG ACGACGACGA CTTGCCGTTT
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2501 CCGTTGCTGA TTCGAGGCGT TAACCGTCAC GAGCATCATC CTCTGCATGG
      GGCAACGACT AAGCTCCGCA ATTGGCAGTG CTCGTAGTAG GAGACGTACC
-----
2551 TCAGGTCATG GATGAGCAGA CGATGGTGCA GGATATCCTG CTGATGAAGC
      AGTCCAGTAC CTACTCGTCT GCTACCACGT CCTATAGGAC GACTACTTCG
-----
2601 AGAACAACTT TAACGCCGTG CGCTGTTCGC ATTATCCGAA CCATCCGCTG
      TCTTGTTGAA ATTGCGGCAC GCGACAAGCG TAATAGGCTT GGTAGGCGAC
-----
2651 TGGTACACGC TGTGCGACCG CTACGGCCTG TATGTGGTGG ATGAAGCCAA
      ACCATGTGCG ACACGCTGGC GATGCCGGAC ATACACCACC TACTTCGGTT
-----
2701 TATTGAAACC CACGGCATGG TGCCAATGAA TCGTCTGACC GATGATCCGC
      ATAACTTTGG GTGCCGTACC ACGGTTACTT AGCAGACTGG CTACTAGGCG
-----
2751 GCTGGCTACC GGCGATGAGC GAACGCGTAA CGCGAATGGT GCAGCGCGAT
      CGACCGATGG CCGCTACTCG CTTGCGCATT GCGCTTACCA CGTCGCGCTA
-----
2801 CGTAATCACC CGAGTGTGAT CATCTGGTCG CTGGGGAATG AATCAGGCCA
      GCATTAGTGG GCTCACACTA GTAGACCAGC GACCCCTTAC TTAGTCCGGT
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2851  CGGCGCTAAT CACGACGCGC TGTATCGCTG GATCAAATCT GTCGATCCTT
      GCCGCGATTA GTGCTGCGCG ACATAGCGAC CTAGTTTAGA CAGCTAGGAA
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2901  CCCGCCCGGT GCAGTATGAA GGCGGCGGAG CCGACACCAC GGCCACCGAT
      GGGCGGGCCA CGTCATACTT CCGCCGCCTC GGCTGTGGTG CCGGTGGCTA
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2951  ATTATTTGCC CGATGTACGC GCGCGTGGAT GAAGACCAGC CCTTCCCGGC
      TAATAAACGG GCTACATGCG CGCGCACCTA CTTCTGGTCG GGAAGGGCCG
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3001  TGTGCCGAAA TGGTCCATCA AAAAATGGCT TTCGCTACCT GGAGAGACGC
      ACACGGCTTT ACCAGGTAGT TTTTACC GAAGCGATGGA CCTCTCTGCG
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3051  GCCCGCTGAT CCTTTGCGAA TACGCCACG CGATGGGTAA CAGTCTTGGC
      CGGGCGACTA GGAAACGCTT ATGCGGGTGC GCTACCCATT GTCAGAACCG
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3101  GGTTCGCTA AATACTGGCA GCGGTTTCGT CAGTATCCCC GTTTACAGGG
      CCAAAGCGAT TTATGACCGT CCGCAAAGCA GTCATAGGGG CAAATGTCCC
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3151  CGGCTTCGTC TGGGACTGGG TGGATCAGTC GCTGATTAAA TATGATGAAA
      GCCGAAGCAG ACCCTGACCC ACCTAGTCAG CGACTAATTT ATACTACTTT
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3201  ACGGCAACCC GTGGTCGGCT TACGGCGGTG ATTTTGGCGA TACGCCGAAC
      TGCCGTTGGG CACCAGCCGA ATGCCGCCAC TAAAACCGCT ATGCGGCTTG
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3251  GATCGCCAGT TCTGTATGAA CGGTCTGGTC TTTGCCGACC GCACGCCGCA
      CTAGCGGTCA AGACATACTT GCCAGACCAG AAACGGCTGG CGTGCGGCGT
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3301  TCCAGCGCTG ACGGAAGCAA AACACCAGCA GCAGTTTTTC CAGTTCCGTT
      AGGTCGCGAC TGCCTTCGTT TTGTGGTCGT CGTCAAAAAG GTCAAGGCAA
-----
3351  TATCCGGGCA AACCATCGAA GTGACCAGCG AATACCTGTT CCGTCATAGC
      ATAGGCCCGT TTGGTAGCTT CACTGGTCGC TTATGGACAA GGCAGTATCG
-----
3401  GATAACGAGC TCCTGCACTG GATGGTGGCG CTGGATGGTA AGCCGCTGGC
      CTATTGCTCG AGGACGTGAC CTACCACCGC GACCTACCAT TCGGCGACCG
-----
3451  AAGCGGTGAA GTGCCTCTGG ATGTCGCTCC ACAAGGTAAA CAGTTGATTG
      TTCGCCACTT CACGGAGACC TACAGCGAGG TGTTCCATTT GTCAACTAAC
-----
3501  AACTGCCTGA ACTACCGCAG CCGGAGAGCG CCGGGCAACT CTGGCTCACA
      TTGACGGACT TGATGGCGTC GGCCTCTCGC GGCCCGTTGA GACCGAGTGT
-----
3551  GTACGCGTAG TGCAACCGAA CGCGACCGCA TGGTCAGAAG CCGGGCACAT
      CATGCGCATC ACGTTGGCTT GCGCTGGCGT ACCAGTCTTC GGCCCGTGTA
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3601  CAGCGCCTGG CAGCAGTGGC GTCTGGCGGA AAACCTCAGT GTGACGCTCC
      GTCGCGGACC GTCGTCACCG CAGACCGCCT TTTGGAGTCA CACTGCGAGG
-----
3651  CCGCCGCGTC CCACGCCATC CCGCATCTGA CCACCAGCGA AATGGATTTT
      GGCGGCGCAG GGTGCGGTAG GGCGTAGACT GGTGGTCGCT TTACCTAAAA
-----
3701  TGCATCGAGC TGGGTAATAA GCGTTGGCAA TTTAACCGCC AGTCAGGCTT
      ACGTAGCTCG ACCCATATT CGCAACCGTT AAATTGGCGG TCAGTCCGAA
-----
3751  TCTTTCACAG ATGTGGATTG GCGATAAAAA ACAACTGCTG ACGCCGCTGC
      AGAAAGTGTC TACACCTAAC CGCTATTTTT TGTTGACGAC TGCGGCGACG

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3801 GCGATCAGTT CACCCGTGTC GATAGATCTG AACAGAACT CATTTCGGAA
CGCTAGTCAA GTGGGCACAG CTATCTAGAC TTGTCTTTGA GTAAAGGCTT

3851 GAAGACCTAG TCGACCATCA TCATCATCAT CACCGGTAAT AATAGGTAGA
CTTCTGGATC AGCTGGTAGT AGTAGTAGTA GTGGCCATTA TTATCCATCT

3901 TAAGTGA CTG ATTAGATGCA TTTCGACTAG ATCCCTCGAC CAATTCCGGT
ATTCATGAC TAATCTACGT AAAGCTGATC TAGGGAGCTG GTTAAGGCCA

3951 TATTTTCCAC CATATTGCCG TCTTTTGGA ATGTGAGGGC CCGGAAACCT
ATAAAAGGTG GTATAACGGC AGAAAACCGT TACACTCCCC GGCCTTTGGA

4001 GGCCCTGTCT TCTTGACGAG CATTCTAGG GGTCTTTCCC CTCTCGCCAA
CCGGGACAGA AGAAGTGTCT GTAAGGATCC CCAGAAAGGG GAGAGCGGTT

4051 AGGAATGCAA GGTCTGTTGA ATGTCGTGAA GGAAGCAGTT CCTCTGGAAG
TCCTTACGTT CCAGACAAC TACAGCACTT CCTTCGTCAA GGAGACCTTC

4101 CTTCTTGAAG ACAAACAACG TCTGTAGCGA CCCTTTGCAG GCAGCGGAAC
GAAGAACTTC TGTGTTGTC AGACATCGCT GGGAAACGTC CGTCGCCTTG

4151 CCCCCACCTG GCGACAGGTG CCTCTGCGGC CAAAAGCCAC GTGTATAAGA
GGGGGTGGAC CGCTGTCCAC GGAGACGCCG GTTTTCGGTG CACATATTCT

4201 TACACCTGCA AAGGCGGCAC AACCCAGTG CCACGTTGTG AGTTGGATAG
ATGTGGACGT TTCCGCCGTG TTGGGGTCAC GGTGCAACAC TCAACCTATC

4251 TTGTGAAAAG AGTCAAATGG CTCTCCTCAA GCGTATTCAA CAAGGGGCTG
AACACCTTTC TCAGTTTACC GAGAGGAGTT CGCATAAGTT GTTCCCCGAC

4301 AAGGATGCCC AGAAGGTACC CCATTGTATG GGATCTGATC TGGGGCCTCG
TTCTTACGGG TCTTCCATGG GGTAAACATAC CCTAGACTAG ACCCCGAGC

4351 GTGCACATGC TTTACATGTG TTTAGTCGAG GTTAAAAAAC GTCTAGGCCC
CACGTGTACG AAATGTACAC AAATCAGCTC CAATTTTTTG CAGATCCGGG

4401 CCCGAACCAC GGGGACGTGG TTTTCCTTTG AAAAACACGA TGATAATACC
GGGCTTGGTG CCCCTGCACC AAAAGGAAAC TTTTGTGCT ACTATTATGG

4451 ATGAAAAAGC CTGAATCAC CGCGACGTCT GTCGAGAAGT TTCTGATCGA
TACTTTTTCG GACTTGAGTG GCGCTGCAGA CAGCTCTTCA AAGACTAGCT

4501 AAAGTTCGAC AGCGTCTCCG ACCTGATGCA GCTCTCGGAG GGCGAAGAAT
TTCAAGCTG TCGCAGAGGC TGGACTACGT CGAGAGCCTC CCGCTTCTTA

4551 CTCGTGCTTT CAGCTTCGAT GTAGGAGGGC GTGGATATGT CCTGCGGGTA
GAGCACGAAA GTCGAAGCTA CATCTCCCG CACCTATACA GGACGCCCAT

4601 AATAGCTGCG CCGATGGTTT CTACAAAGAT CGTTATGTTT ATCGGCACTT
TTATCGACGC GGCTACCAA GATGTTTCTA GCAATACAAA TAGCCGTGAA

4651 TGCATCGGCC GCGCTCCCGA TTCCGGAAGT GCTTGACATT GGGGAATTTA
ACGTAGCCGG CCGGAGGGCT AAGGCCTTCA CGAACTGTAA CCCCTTAAAT

4701 GCGAGAGCCT GACCTATTGC ATCTCCCGCC GTGCACAGGG TGTACGTTG
CGCTCTCGGA CTGGATAACG TAGAGGGCGG CACGTGTCCC ACAGTGCAAC

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4751 CAAGACCTGC CTGAAACCGA ACTGCCCGCT GTTCTGCAGC CGGTCGCGGA
      GTTCTGGACG GACTTTGGCT TGACGGGCGA CAAGACGTCG GCCAGCGCCT
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4801 GGCCATGGAT GCGATCGCTG CGGCCGATCT TAGCCAGACG AGCGGGTTTCG
      CCGGTACCTA CGCTAGCGAC GCCGGCTAGA ATCGGTCTGC TCGCCCAAGC
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      CGGGTAAGCC TGGCGTTCCT TAGCCAGTTA TGTGATGTAC CGCACTAAAG
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      TATACGCGCT AACGACTAGG GGTACACATA GTGACCGTTT GACACTACCT
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      GCTGTGGCAG TCACGCAGGC AGCGCGTCCG AGAGCTACTC GACTACGAAA
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      CCCGGCTCCT GACGGGGCTT CAGGCCGTGG AGCACGTGCG CCTAAAGCCG
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5051 TCCAACAATG TCCTGACGGA CAATGGCCGC ATAACAGCGG TCATTGACTG
      AGGTTGTTAC AGGACTGCCT GTTACCGGCG TATTGTCGCC AGTAACTGAC
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5101 GAGCGAGGCG ATGTTCCGGG ATTCCCAATA CGAGGTCGCC AACATCTTCT
      CTCGCTCCGC TACAAGCCCC TAAGGGTTAT GCTCCAGCGG TTGTAGAAGA
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      AGACCTCCGG CACCAACCGA ACATACCTCG TCGTCTGCGC GATGAAGCTC
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5201 CGGAGGCATC CGGAGCTTGC AGGATCGCCG CGGCTCCGGG CGTATATGCT
      GCCTCCGTAG GCCTCGAACG TCCTAGCGGC GCCGAGGCC GCATATACGA
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5251 CCGCATTGGT CTTGACCAAC TCTATCAGAG CTTGGTTGAC GGCAATTTTCG
      GGCGTAACCA GAACTG6TTG AGATAGTCTC GAACCAACTG CCGTTAAAGC
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5301 ATGATGCAGC TTGGGCGCAG GGTCGATGCG ACGCAATCGT CCGATCCGGA
      TACTACGTCG AACC6GCGTC CCAGCTACGC TGCGTTAGCA GGCTAGGCCT
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5351 GCCGGGACTG TCGGGCGTAC ACAAATCGCC CGCAGAAGCG CGGCCGTCTG
      CGGCCCTGAC AGCCCGCATG TGTTTAGCGG GCGTCTTCGC GCCGGCAGAC
-----
5401 GACCGATGGC TGTGTAGAAG TACTCGCCGA TAGTGGAAC CGACGCCCCA
      CTGGCTACCG ACACATCTTC ATGAGCGGCT ATCACCTTTG GCTGCGGGGT
-----
5451 GCACTCGTCC GAGGGCAAAG GAATAGAGTA GATGCCGACC GGGATCTATC
      CGTGAGCAGG CTCCC6TTTC CTTATCTCAT CTACGGCTGG CCCTAGATAG
-----
5501 GATAAAATAA AAGATTTTAT TTAGTCTCCA GAAAAAGGGG GGAATGAAAG
      CTATTTTATT TTCTAAATA AATCAGAGGT CTTTTTCCCC CCTTACTTTC
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5551 ACCCCACCTG TAGGTTTGGC AAGCTAGCTT AAGTAACGCC ATTTTGCAAG
      TGGGGTGGAC ATCCAAACCG TTCGATCGAA TTCATTGCGG TAAAACGTTT
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5601 GCATGGAAAA ATACATAACT GAGAATAGAG AAGTTCAGAT CAAGGTCAGG
      CGTACCTTTT TATGTATTGA CTCTTATCTC TTCAAGTCTA GTTCCAGTCC
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5651 AACAGATGGA ACAGCTGAAT ATGGGCCAAA CAGGATATCT GTGGTAAGCA
      TTGTCTACCT TGTCGACTTA TACCCGTTT GTCTATAGA CACCATTCGT
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5701 GTTCCTGCCC CGGCTCAGGG CCAAGAACAG ATGGAACAGC TGAATATGGG
CAAGGACGGG GCCGAGTCCC GGTTCCTGTC TACCTTGTCG ACTTATACCC

5751 CCAAACAGGA TATCTGTGGT AAGCAGTTCC TGCCCCGGCT CAGGGCCAAG
GGTTTGTCTT ATAGACACCA TTCGTCAAGG ACGGGGCCGA GTCCCCGTTT

5801 AACAGATGGT CCCAGATGC GGTCCAGCCC TCAGCAGTTT CTAGAGAACC
TTGTCTACCA GGGGTCTACG CCAGGTCGGG AGTCGTCAAA GATCTCTTGG

5851 ATCAGATGTT TCCAGGGTGC CCCAAGGACC TGAAATGACC CTGTGCCTTA
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5901 TTTGAACTAA CCAATCAGTT CGCTTCTCGC TTCTGTTCGC GCGCTTCTGC
AAACTTGATT GGTTAGTCAA GCGAAGAGCG AAGACAAGCG CGCGAAGACG

5951 TCCCCGAGCT CAATAAAGA GCCCACAACC CCTCACTCGG GCGGCCAGTC
AGGGGCTCGA GTTATTTTCT CGGGTGTTGG GGAGTGAGCC CCGCGGTCAG

6001 CTCCGATTGA CTGAGTCGCC CGGGTACCCG TGTATCCAAT AAACCCTCTT
GAGGCTAACT GACTCAGCGG GCCCATGGGC ACATAGGTTA TTTGGGAGAA

6051 GCAGTTGCAT CCGACTTGTT GTCTCGCTGT TCCTTGGGAG GGTCTCCTCT
CGTCAACGTA GGCTGAACAC CAGAGCGACA AGGAACCCCTC CCAGAGGAGA

6101 GAGTGATTGA CTACCCGTCA GCGGGGGTCT TTCATTTCATG CAGCATGTAT
CTCACTAACT GATGGGCAGT CGCCCCAGA AAGTAAGTAC GTCGTACATA

6151 CAAAATTAAT TTGGTTTTTT TTCTTAAGTA TTTACATTAA ATGGCCATAG
GTTTTAATTA AACCAAAAAA AAGAATTCAT AAATGTAATT TACCGGTATC

6201 TTGCATTAAT GAATCGGCCA ACGCGCGGGG AGAGGCGGTT TGCGTATTGG
AACGTAATTA CTTAGCCGGT TGCGCGCCCC TCTCCGCCAA ACGCATAACC

6251 CGCTCTTCCG CTTCTTCGCT CACTGACTCG CTGCGCTCGG TCGTTCCGGT
GCGAGAAGGC GAAGGAGCGA GTGACTGAGC GACGCGAGCC AGCAAGCCGA

6301 GCGGCGAGCG GTATCAGCTC ACTCAAAGGC GGTAATACGG TTATCCACAG
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6351 AATCAGGGGA TAACGCAGGA AAGAACATGT GAGCAAAAGG CCAGCAAAAG
TTAGTCCCCT ATTGCGTCCT TTCTTGTA CACTGTTTTCC GGTGTTTTT

6401 GCCAGGAACC GTAAAAAGGC CGCGTTGCTG GCGTTTTTCC ATAGGCTCCG
CGTTCCTTGG CATTTTTCCG GCGCAACGAC CGCAAAAAGG TATCCGAGGC

6451 CCCCCCTGAC GAGCATCACA AAAATCGACG CTCAAGTCAG AGGTGGCGAA
GGGGGACTG CTCGTAGTGT TTTTAGCTGC GAGTTCAGTC TCCACCGCTT

6501 ACCCGACAGG ACTATAAAGA TACCAGGCGT TTCCCCCTGG AAGCTCCCTC
TGGGCTGTCC TGATATTTCT ATGGTCCGCA AAGGGGGACC TTCGAGGGAG

6551 GTGCGCTCTC CTGTTCCGAC CCTGCCGCTT ACCGGATACC TGTCCGCCTT
CACGCGAGAG GACAAGGCTG GGACGGCGAA TGGCCTATGG ACAGGCGGAA

6601 TCTCCCTTCG GGAAGCGTGG CGCTTTCTCA TAGCTCACGC TGTAGGTATC
AGAGGAAGC CCTTCGCACC GCGAAAGAGT ATCGAGTGCG ACATCCATAG

6651 TCAGTTCGGT GTAGGTCGTT CGCTCCAAGC TGGGCTGTGT GCACGAACCC
AGTCAAGCCA CATCCAGCAA GCGAGGTTTCG ACCCGACACA CGTGCTTGGG

6701 CCCGTTTCAAGC CCGACCGCTG CGCCTTATCC GGTAACATATC GTCTTGAGTC
GGGCAAGTCG GGCTGGCGAC GCGGAATAGG CCATTGATAG CAGAACTCAG

6751 CAACCCGGTA AGACACGACT TATCGCCACT GGCAGCAGCC ACTGGTAACA
GTTGGGGCCAT TCTGTGCTGA ATAGCGGTGA CCGTCGTCGG TGACCATTGT

6801 GGATTAGCAG AGCGAGGTAT GTAGGCGGTG CTACAGAGTT CTTGAAGTGG
CCTAATCGTC TCGCTCCATA CATCCGCCAC GATGTCTCAA GAACTTCACC

6851 TGGCCTAACT ACGGCTACAC TAGAAGAACA GTATTTGGTA TCTGCGCTCT
ACCGGATTGA TGCCGATGTG ATCTTCTTGT CATAAACCAT AGACGCGAGA

6901 GCTGAAGCCA GTTACCTTCG GAAAAAGAGT TGGTAGCTCT TGATCCGGCA
CGACTTCGGT CAATGGAAGC CTTTTTCTCA ACCATCGAGA ACTAGGCCGT

6951 AACAAACCAC CGCTGGTAGC GGTGGTTTTT TTGTTTGCAA GCAGCAGATT
TTGTTTGGTG GCGACCATCG CCACCAAAAA AACAAACGTT CGTCGTCTAA

7001 ACGCGCAGAA AAAAAGGATC TCAAGAAGAT CCTTTGATCT TTTCTACGGG
TGCGCGTCTT TTTTTCCTAG AGTTCTTCTA GGAAACTAGA AAAGATGCC

7051 GTCTGACGCT CAGTGAACG AAAACTCACG TTAAGGGATT TTGGTCATGA
CAGACTGCGA GTCACCTTGC TTTTGAGTGC AATTCCCTAA AACCAGTACT

7101 GATTATCAAA AAGGATCTTC ACCTAGATCC TTTTAAATTA AAAATGAAGT
CTAATAGTTT TTCCTAGAAG TGGATCTAGG AAAATTTAAT TTTTACTTCA

7151 TTGCGGCCGC AAATCAATCT AAAGTATATA TGAGTAACT TGGTCTGACA
AACGCCGCGC TTTAGTTAGA TTTCATATAT ACTCATTTGA ACCAGACTGT

7201 GTTACCAATG CTTAATCAGT GAGGCACCTA TCTCAGCGAT CTGTCTATTT
CAATGGTTAC GAATTAGTCA CTCCGTGGAT AGAGTCGCTA GACAGATAAA

7251 CGTTCATCCA TAGTTGCCTG ACTCCCGTC GTGTAGATAA CTACGATACG
GCAAGTAGGT ATCAACGGAC TGAGGGGCAG CACATCTATT GATGCTATGC

7301 GGAGGGCTTA CCATCTGGCC CCACTGCTGC AATGATACCG CGAGACCCAC
CCTCCCGAAT GGTAGACCGG GGTCACGACG TTACTATGGC GCTCTGGGTG

7351 GCTCACCGGC TCCAGATTTA TCAGCAATAA ACCAGCCAGC CGGAAGGGCC
CGAGTGCCG AGGTCTAAAT AGTCGTTATT TGGTCGGTCG GCCTTCCCG

7401 GAGCGCAGAA GTGGTCCTGC AACTTTATCC GCCTCCATCC AGTCTATTAA
CTCGCGTCTT CACCAGGACG TTGAAATAGG CGGAGGTAGG TCAGATAATT

7451 TTGTTGCCGG GAAGCTAGAG TAAGTAGTTC GCCAGTTAAT AGTTTGGCA
AACAACGGCC CTTGATCTC ATTCATCAAG CGGTCAATTA TCAAACGCGT

7501 ACGTTGTTGC CATTGCTACA GGCATCGTGG TGTCACGCTC GTCGTTTGGT
TGCAACAACG GTAACGATGT CCGTAGCACC ACAGTGCAG CAGCAAACCA

7551 ATGGCTTCAT TCAGCTCCGG TTCCCAACGA TCAAGGCGAG TTACATGATC
TACCGAAGTA AGTCGAGGCC AAGGTTGCT AGTTCGCTC AATGTACTAG

7601 CCCCATGTTG TGCAAAAAAG CGGTTAGCTC CTTCGGTCCT CCGATCGTTG
GGGGTACAAC ACGTTTTTTC GCCAATCGAG GAAGCCAGGA GGCTAGCAAC

7651 TCAGAAGTAA GTTGGCCGCA GTGTTATCAC TCATGGTTAT GGCAGCACTG
AGTCTTCATT CAACCGGCGT CACAATAGTG AGTACCAATA CCGTCGTGAC

7701 CATAATTCTC TTACTGTCAT GCCATCCGTA AGATGCTTTT CTGTGACTGG
GTATTAAGAG AATGACAGTA CGGTAGGCAT TCTACGAAAA GACACTGACC

7751 TGAGTACTCA ACCAAGTCAT TCTGAGAATA GTGTATGCGG CGACCGAGTT
ACTCATGAGT TGGTTCAGTA AGACTCTTAT CACATACGCC GCTGGCTCAA

7801 GCTCTTGCCC GGCCTCAATA CGGGATAATA CCGCGCCACA TAGCAGAACT
CGAGAACGGG CCGCAGTTAT GCCCTATTAT GCGCGGGTGT ATCGTCTTGA

7851 TTAAAAGTGC TCATCATTGG AAAACGTTCT TCGGGGCGAA AACTCTCAAG
AATTTTCACG AGTAGTAACC TTTTGCAAGA AGCCCCGCTT TTGAGAGTTC

7901 GATCTTACCG CTGTTGAGAT CCAGTTCGAT GTAACCCACT CGTGCACCCA
CTAGAATGGC GACAACTCTA GGTCAAGCTA CATTGGGTGA GCACGTGGGT

7951 ACTGATCTTC AGCATCTTTT ACTTTCACCA GCGTTTCTGG GTGAGCAAAA
TGACTAGAAG TCGTAGAAAA TGAAAGTGGT CGCAAAGACC CACTCGTTTT

8001 ACAGGAAGGC AAAATGCCGC AAAAAAGGGA ATAAGGGCGA CACGGAATG
TGTCTTCCG TTTTACGGCG TTTTTCCTCT TATTCCCGCT GTGCCTTTAC

8051 TTGAATACTC ATACTCTTCC TTTTCAATA TTATTGAAGC ATTTATCAGG
AACTTATGAG TATGAGAAGG AAAAAGTTAT AATAACTTCG TAAATAGTCC

8101 GTTATTGTCT CATGAGCGGA TACATATTTG AATGTATTTA GAAAAATAAA
CAATAACAGA GTACTCGCCT ATGTATAAAC TTACATAAAT CTTTTTATTT

8151 CAAATAGGGG TTCCGCGCAC ATTTT
GTTTATCCCC AAGGCGCGTG TAAAG

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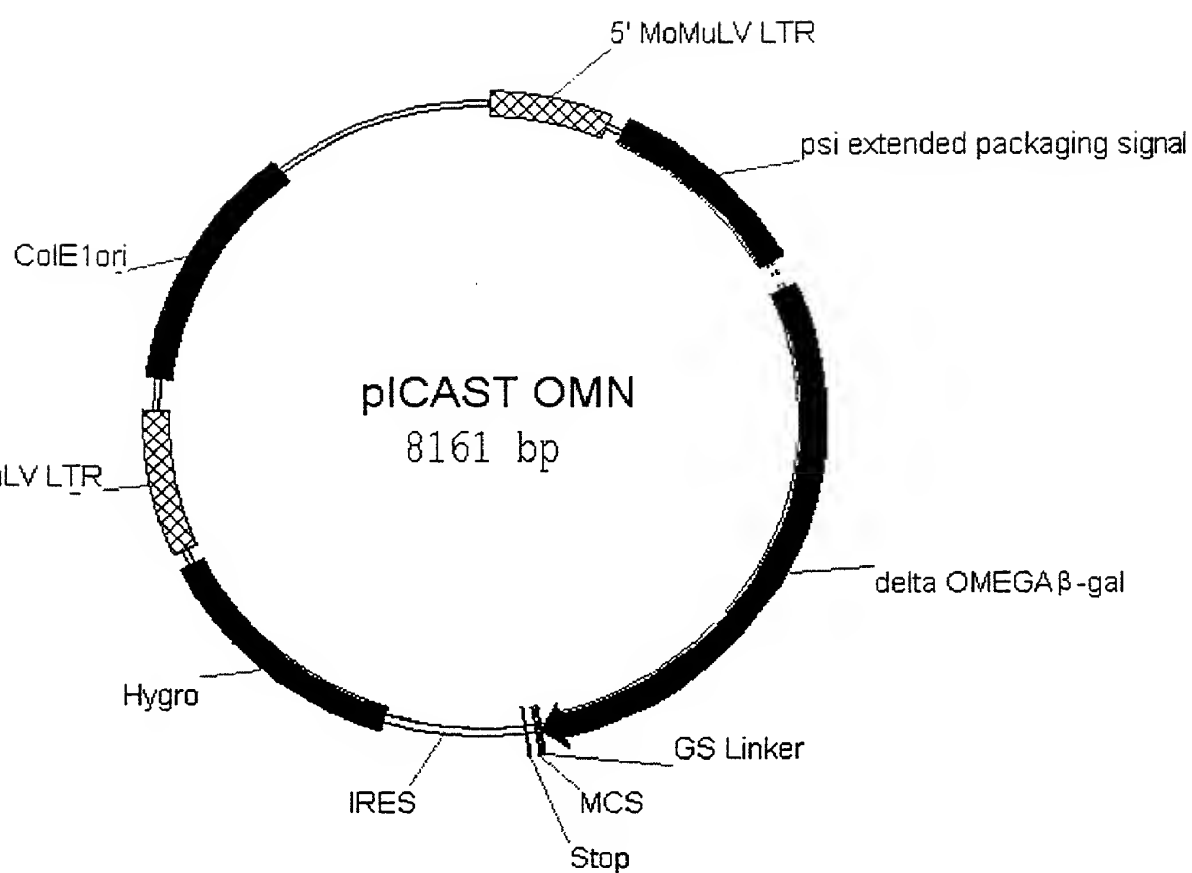


Figure 13A

1	CTGCAGCCTG	AATATGGGCC	AAACAGGATA	TCTGTGGTAA	GCAGTTCCTG
	GACGTCGGAC	TTATACCCGG	TTTGTCTTAT	AGACACCAT	CGTCAAGGAC

51	CCCCGGCTCA	GGGCCAAGAA	CAGATGGAAC	AGCTGAATAT	GGGCCAAACA
	GGGGCCGAGT	CCCGGTTCTT	GTCTACCTTG	TCGACTTATA	CCCGGTTTGT

101	GGATATCTGT	GGTAAGCAGT	TCCTGCCCCG	GCTCAGGGCC	AAGAACAGAT
	CCTATAGACA	CCATTCGTCA	AGGACGGGGC	CGAGTCCCGG	TTCTTGTCTA

151	GGTCCCCAGA	TGCGGTCCAG	CCCTCAGCAG	TTTCTAGAGA	ACCATCAGAT
	CCAGGGGTCT	ACGCCAGGTC	GGGAGTCGTC	AAAGATCTCT	TGGTAGTCTA

201	GTTTCCAGGG	TGCCCCAAGG	ACCTGAAATG	ACCCTGTGCC	TTATTTGAAC
	CAAAGGTCCC	ACGGGGTTCC	TGGACTTTAC	TGGGACACGG	AATAAACTTG

251	TAACCAATCA	GTTCGCTTCT	CGCTTCTGTT	CGCGCGCTTC	TGCTCCCCGA
	ATTGGTTAGT	CAAGCGAAGA	GCGAAGACAA	GCGCGCGAAG	ACGAGGGGCT

301	GCTCAATAAA	AGAGCCCACA	ACCCCTCACT	CGGGGCGCCA	GTCCTCCGAT
	CGAGTTATTT	TCTCGGGTGT	TGGGGAGTGA	GCCCCGCGGT	CAGGAGGCTA

351	TGACTGAGTC	GCCCGGGTAC	CCGTGTATCC	AATAAACCCCT	CTTGCAAGTTG
	ACTGACTCAG	CGGGCCCATG	GGCACATAGG	TTATTTGGGA	GAACGTCAAC

401	CATCCGACTT	GTGGTCTCGC	TGTTCCCTTG	GAGGGTCTCC	TCTGAGTGAT
	GTAGGCTGAA	CACCAGAGCG	ACAAGGAACC	CTCCAGAGG	AGACTCACTA

451	TGACTACCCG	TCAGCGGGGG	TCTTTCATTT	GGGGGCTCGT	CCGGGATCGG
	ACTGATGGGC	AGTCGCCCCC	AGAAAGTAAA	CCCCCGAGCA	GGCCCTAGCC

501	GAGACCCCTG	CCCAGGGACC	ACCGACCCAC	CACCGGGAGG	CAAGCTGGCC
	CTCTGGGGAC	GGGTCCCTGG	TGGCTGGGTG	GTGGCCCTCC	GTTCGACCGG

551	AGCAACTTAT	CTGTGTCTGT	CCGATTGTCT	AGTGTCTATG	ACTGATTTTA
	TCGTTGAATA	GACACAGACA	GGCTAACAGA	TCACAGATAC	TGACTAAAAT

601	TGCGCCTGCG	TCGGTACTAG	TTAGCTAACT	AGCTCTGTAT	CTGGCGGACC
	ACGCGGACGC	AGCCATGATC	AATCGATTGA	TCGAGACATA	GACCGCCTGG

651	CGTGGTGGA	CTGACGAGTT	CTGAACACCC	GGCCGCAACC	CTGGGAGACG
	GCACCACCTT	GACTGTCTAA	GACTTGTGGG	CCGGCGTTGG	GACCCTCTGC

701	TCCCAGGGAC	TTTGGGGGCC	GTTTTTGTGG	CCCAGCTGA	GGAAGGGAGT
	AGGGTCCCTG	AAACCCCCGG	CAAAAACACC	GGGCTGGACT	CCTTCCCTCA

751	CGATGTGGAA	TCCGACCCCG	TCAGGATATG	TGGTTCTGGT	AGGAGACGAG
	GCTACACCTT	AGGCTGGGGC	AGTCCTATAC	ACCAAGACCA	TCCTCTGCTC

801	AACCTAAAAC	AGTTCCCGCC	TCCGTCTGAA	TTTTTGCTTT	CGGTTTGGA
	TTGGATTTTG	TCAAGGGCGG	AGGCAGACTT	AAAAACGAAA	GCCAAACCTT

851	CCGAAGCCGC	GCGTCTTGTC	TGCTGCAGCA	TCGTTCTGTG	TTGTCTCTGT
	GGCTTCGGCG	CGCAGAACAG	ACGACGTCGT	AGCAAGACAC	AACAGAGACA

901	CTGACTGTGT	TTCTGTATTT	GTCTGAAAAT	TAGGGCCAGA	CTGTTACCAC
	GACTGACACA	AAGACATAAA	CAGACTTTTA	ATCCCGGTCT	GACAATGGTG

FIGURE 13B


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951  TCCCTTAAGT  TTGACCTTAG  GTAAGTGGAA  AGATGTCGAG  CGGCTCGGTC
     AGGGAATTCA  AACTGGAATC  CATTGACCTT  TCTACAGCTC  GCCGAGCGAG
-----
1001  ACAACCAGTC  GGTAGATGTC  AAGAAGAGAC  GTTGGGTTAC  CTTCTGCTCT
     TGTGTCAG   CCATCTACAG  TTCTTCTCTG  CAACCAATG   GAAGACGAGA
-----
1051  GCAGAAATGGC  CAACCTTTAA  CGTCGGATGG  CCGCGAGACG  GCACCTTTAA
     CGTCTTACCG  GTTGAAATT   GCAGCCTACC  GCGCTCTGCT  CGTGAAATT
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1101  CCGAGACCTC  ATCACCAGG   TTAAGATCAA  GGTCTTTTCA  CCTGGCCCGC
     GGCTCTGGAG  TAGTGGGTCC  AATTCTAGTT  CCAGAAAAGT  GGACCGGGCG
-----
1151  ATGGACACCC  AGACCAGGTC  CCTACATCG   TGACCTGGGA  AGCCTTGGCT
     TACCTGTGGG  TCTGGTCCAG  GGGATGTAGC  ACTGGACCCT  TCGGAACCGA
-----
1201  TTTGACCCCC  CTCCCTGGGT  CAAGCCCTTT  GTACACCCTA  AGCCTCCGCC
     AAAGTGGGGG  GAGGGACCCA  GTTCGGGAAA  CATGTGGGAT  TCGGAGGCGG
-----
1251  TCCTCTTCCT  CCATCCGCCC  CGTCTCTCCC  CCTTGAACCT  CCTCGTTCGA
     AGGAGAAGGA  GGTAGGCGGG  GCAGAGAGGG  GGAACCTGGA  GGAGCAAGCT
-----
1301  CCCCgcCTCG  ATCCTCCCTT  TATCCAGCCC  TCACTCCTTC  TCTAGGCGCC
     GGGGCGGAGC  TAGGAGGGAA  ATAGGTCGGG  AGTGAGGAAG  AGATCCGCGG
-----
1351  GGCCGCTCTA  GCCATTAAAT  ACGACTCACT  ATAGGGCGAT  TCGAACACCA
     CCGCGGAGAT  CGGGTAATTA  TGCTGAGTGA  TATCCCGCTA  AGCTTGTGGT
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1401  TGCACCATCA  TCATCATCAC  GTCGACGAAC  AGAAACTCAT  TTCCGAAGAA
     ACGTGGTAGT  AGTAGTAGTG  CAGCTGCTTG  TCTTTGAGTA  AAGGCTTCTT
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1451  GACCTACTCG  AGATGGGCGT  GATTACGGAT  TCACTGGCCG  TCGTTTACA
     CTGGATGAGC  TCTACCCGCA  CTAATGCCTA  AGTGACCGGC  AGCAAAATGT
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1501  ACGTCGTGAC  TGGGAAAACC  CTGGCGTTAC  CCAACTTAAT  CGCCTTGCAG
     TGCAGCACTG  ACCCTTTTGG  GACCGCAATG  GGTGAATTA   GCGGAACGTC
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1551  CACATCCCCC  TTTCCGAGC   TGGCGTAATA  GCGAAGAGGC  CCGCACCGAT
     GTGTAGGGGG  AAAGCGGTCT  ACCGATTAT   CGCTTCTCCG  GCGTGGCTA
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1601  CGCCCTTCCC  AACAGTTACG  CAGCCTGAAT  GGCGAATGGC  GCTTTGCCTG
     GCGGGAAGGG  TTGTCAATGC  GTCGGACTTA  CCGCTTACCG  CGAAACGGAC
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1651  GTTTCGGGCA  CCAGAAGCGG  TGCCGAAAG   CTGGCTGGAG  TGCGATCTTC
     CAAAGGCCGT  GGTCTTCGCC  ACGGCCTTTC  GACCGACCTC  ACGCTAGAAG
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1701  CTGAGGCCGA  TACTGTCGTC  GTCCCTCAA   ACTGGCAGAT  GCACGGTTAC
     GACTCCGGCT  ATGACAGCAG  CAGGGGAGTT  TGACCGTCTA  CGTGCCAATG
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1751  GATGCGCCCA  TCTACACCAA  CGTGACCTAT  CCCATTACGG  TCAATCCGCC
     CTACGCGGGT  AGATGTGGTT  GCACTGGATA  GGGTAATGCC  AGTTAGGCGG
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1801  GTTTGTTCCT  ACGGAGAATC  CGACGGGTTG  TTAAGCGCTC  ACATTTAATG
     CAAACAAGGG  TGCCTCTTAG  GCTGCCCAAC  AATGAGCGAG  TGTAATTAC
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1851  TTGATGAAAG  CTGGCTACAG  GAAGGCCAGA  CGCGAATTAT  TTTGATGGC
     AACTACTTTC  GACCGATGTC  CTTCCGGTCT  GCGCTTAATA  AAAACTACCG
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1901 GTTAACTCGG CGTTTCATCT GTGGTGCAAC GGGCGCTGGG TCGGTTACGG
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1951 CCAGGACAGT CGTTTGCCGT CTGAATTTGA CCTGAGCGCA TTTTACGCG
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2001 CCGGAGAAAA CCGCCTCGCG GTGATGGTGC TGCCTGGAG TGACGGCAGT
    GGCCTCTTTT GCGGAGCGC CACTACCACG ACGCGACCTC ACTGCCGTCA
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2051 TATCTGGAAG ATCAGGATAT GTGGCGGATG AGCGGCATTT TCCGTGACGT
    ATAGACCTTC TAGTCCTATA CACCGCCTAC TCGCCGTAA AGGCACTGCA
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2101 CTCGTTGCTG CATAAACCGA CTACACAAAT CAGCGATTTT CATGTTGCCA
    GAGCAACGAC GTATTTGGCT GATGTGTTTA GTCGCTAAAG GTACAACGGT
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2151 CTCGCTTTAA TGATGATTTC AGCCGCGCTG TACTGGAGGC TGAAGTTCAG
    GAGCGAAATT ACTACTAAAG TCGGCGCGAC ATGACCTCCG ACTTCAAGTC
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2201 ATGTGCGGCG AGTTGCGTGA CTACCTACGG GTAACAGTTT CTTTATGGCA
    TACACGCCGC TCAACGCACT GATGGATGCC CATTGTCAA GAAATACCGT
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2251 GGGTGAAACG CAGGTCGCCA GCGGCACCGC GCCTTTCGGC GGTGAAATTA
    CCCACTTTGC GTCCAGCGGT CGCCGTGGCG CGGAAAGCCG CCACTTTAAT
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2301 TCGATGAGCG TGGTGGTTAT GCCGATCGCG TCACACTACG TCTGAACGTC
    AGCTACTCGC ACCACCAATA CGGCTAGCGC AGTGTGATGC AGACTTGCAG
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2351 GAAAACCCGA AACTGTGGAG CGCCGAAATC CCGAATCTCT ATCGTGCGGT
    CTTTTGGGCT TTGACACCTC GCGGCTTAG GGCTTAGAGA TAGCACGCCA
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2401 GGTGAACTG CACACCGCG ACGGCACGCT GATTGAAGCA GAAGCCTGCG
    CCAACTTGAC GTGTGCGGCG TGCCGTGCGA CTAACCTCGT CTCGGACGC
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2451 ATGTCGGTTT CCGCGAGGTG CGGATTGAAA ATGGTCTGCT GCTGCTGAAC
    TACAGCCAAA GCGCTCCAC GCCTAACTTT TACCAGACGA CGACGACTTG
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2501 GGCAAGCCGT TGCTGATTCT AGGCGTTAAC CGTCACGAGC ATCATCTCT
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2551 GCATGGTCAG GTCATGGATG AGCAGACGAT GGTGCAGGAT ATCCTGCTGA
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2601 TGAAGCAGAA CAACTTTAAC GCCGTGCGCT GTTCGCATTA TCCGAACCAT
    ACTTCGTCTT GTTGAAATTG CGGCACGCGA CAAGCGTAAT AGGCTTGGA
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2651 CCGCTGTGGT ACACGCTGTG CGACCGCTAC GGCCTGTATG TGGTGGATGA
    GGCGACACCA TGTGCGACAC GCTGGCGATG CCGGACATAC ACCACCTACT
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2701 AGCCAATATT GAAACCCACG GCATGGTGCC AATGAATCGT CTGACCGATG
    TCGGTTATAA CTTTGGGTGC CGTACCACGG TTAATTAGCA GACTGGCTAC
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2751 ATCCGCGCTG GCTACCGGCG ATGAGCGAAC GCGTAACGCG AATGGTGCAG
    TAGGCGCGAC CGATGGCCGC TACTCGCTTG CGCATTGCGC TTACCACGTC
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2801 CGCGATCGTA ATCACCCGAG TGTGATCATC TGGTCGCTGG GGAATGAATC
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2851 AGGCCACGGC GCTAATCACG ACGCGCTGTA TCGCTGGATC AAATCTGTCC
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2901 ATCCTTCCCG CCCGGTGCAG TATGAAGGCG GCGGAGCCGA CACCACGGCC
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2951 ACCGATATTA TTTGCCCCGAT GTACGCGCGC GTGGATGAAG ACCAGCCCTT
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3001 CCCGGCTGTG CCGAAATGGT CCATCAAAAA ATGGCTTTTCG CTACCTGGAG
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3051 AGACGCGCCC GCTGATCCTT TGCGAATACG CCCACGCGAT GGGTAACAGT
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3101 CTGGCGGGTT TCGCTAAATA CTGGCAGGCG TTTCTGTCAGT ATCCCCGTTT
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3151 ACAGGGCGGC TTCGTCTGGG ACTGGGTGGA TCAGTCGCTG ATTAAATATG
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3201 ATGAAAACGG CAACCCGTGG TCGGCTTACG GCGGTGATTT TGGCGATACG
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3251 CCGAACGATC GCCAGTTCTG TATGAACGGT CTGGTCTTTG CCGACCGCAC
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3351 TCCGTTTATC CGGGCAAACC ATCGAAGTGA CCAGCGAATA CCTGTTCCGT
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3401 CATAGCGATA ACGAGCTCCT GCACTGGATG GTGGCGCTGG ATGGTAAGCC
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3451 GCTGGCAAGC GGTGAAGTGC CTCTGGATGT CGCTCCACAA GGTAAACAGT
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3501 TGATTGAACT GCCTGAACTA CCGCAGCCGG AGAGCGCCGG GCAACTCTGG
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3551 CTCACAGTAC GCGTAGTGCA ACCGAACGCG ACCGCATGGT CAGAAGCCGG
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3601 GCACATCAGC GCCTGGCAGC AGTGGCGTCT GGCGGAAAAC CTCAGTGTGA
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3651 CGCTCCCCGC CGCGTCCCAC GCCATCCCGC ATCTGACCAC CAGCGAAATG
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3701 GATTTTTGCA TCGAGCTGGG TAATAAGCGT TGGCAATTTA ACCGCCAGTC
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3751 AGGCTTTCTT TCACAGATGT GGATTGGCGA TAAAAACAA CTGCTGACGC
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3801  CGCTGCGCGA TCAGTTCACC CGTGTCGATA GATCTGGAGG TGGTGGCAGC
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3901  TAGATAAGTG ACTGATTAGA TGCATTTCTG CTAGATCCCT CGACCAATTC
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3951  CGGTTATTTT CCACCATATT GCCGTCTTTT GGCAATGTGA GGGCCCGGAA
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4001  ACCTGGCCCT GTCTTCTTGA CGAGCATTCG TAGGGGTCTT TCCCCTCTCG
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4051  CCAAAGGAAT GCAAGGTCTG TTGAATGTCT TGAAGGAAGC AGTTCCTCTG
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4101  GAAGCTTCTT GAAGACAAAC AACGTCTGTA GCGACCCCTT GCAGGCAGCG
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4151  GAACCCCCCA CCTGGCGACA GGTGCCTCTG CGGCCAAAAG CCACGTGTAT
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4201  AAGATACACC TGCAAAGGCG GCACAACCCC AGTGCCACGT TGTGAGTTGG
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4251  ATAGTTGTGG AAAGAGTCAA ATGGCTCTCC TCAAGCGTAT TCAACAAGGG
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4301  GCTGAAGGAT GCCCAGAAGG TACCCCATTTG TATGGGATCT GATCTGGGGC
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4351  CTCGGTGCAC ATGCTTTACA TGTGTTTAGT CGAGGTTAAA AAACGTCTAG
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4401  GGGGGGCGAA CCACGGGGAC GTGGTTTTCC TTTGAAAAAC ACGATGATAA
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4451  TACCATGAAA AAGCCTGAAC TCACCGCGAC GTCTGTCGAG AAGTTTCTGA
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4501  TCGAAAAGTT CGACAGCGTC TCCGACCTGA TGCAGCTCTC GGAGGGCGAA
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4551  GAATCTCGTG CTTTCAGCTT CGATGTAGGA GGGCGTGGAT ATGTCCTGCG
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4601  GGTAATAGC TCGCCCGATG GTTTCTACAA AGATCGTTAT GTTTATCGGC
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4651  ACTTTGCATC GGCCGCGCTC CCGATTCCGG AAGTGCTTGA CATTGGGGAA
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4701  TTTAGCGAGA GCCTGACCTA TTGCATCTCC CGCCGTGCAC AGGGTGTAC
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4801 CGGAGGCCAT GGATGCGATC GCTGCGGCCG ATCTTAGCCA GACGAGCGGG  
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4851 TTCGGCCCAT TCGGACCGCA AGGAATCGGT CAATACACTA CATGGCGTGA  
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4901 TTTCATATGC GCGATTGCTG ATCCCCATGT GTATCACTGG CAAACTGTGA  
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4951 TGGACGACAC CGTCAGTGCG TCCGTCGCGC AGGCTCTCGA TGAGCTGATG  
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5001 CTTTGGGCCG AGGACTGCCC CGAAGTCCGG CACCTCGTGC ACGCGGATTT  
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5051 CGGCTCCAAC AATGTCCTGA CGGACAATGG CCGCATAACA GCGGTCATTG  
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5101 ACTGGAGCGA GGCGATGTTT GGGGATTCCC AATACGAGGT CGCCAACATC  
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5151 TTCTTCTGGA GGCCGTGGTT GGCTTGTATG GAGCAGCAGA CGCGCTACTT  
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5201 CGAGCGGAGG CATCCGGAGC TTGCAGGATC GCCGCGGCTC CGGGCGTATA  
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5251 TGCTCCGCAT TGGTCTTGAC CAACTCTATC AGAGCTTGGT TGACGGCAAT  
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5301 TTCGATGATG CAGCTTGGGC GCAGGGTCGA TGCGACGCAA TCGTCCGATC  
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5351 CGGAGCCGGG ACTGTCGGGC GTACACAAAT CGCCCGCAGA AGCGCGGCCG  
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5401 TCTGGACCGA TGGCTGTGTA GAAGTACTCG CCGATAGTGG AAACCGACGC  
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5451 CCCAGCACTC GTCCGAGGGC AAAGGAATAG AGTAGATGCC GACCGGGATC  
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5501 TATCGATAAA ATAAAAGATT TTATTTAGTC TCCAGAAAAA GGGGGGAATG  
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5551 AAAGACCCCA CCTGTAGGTT TGGCAAGCTA GCTTAAGTAA CGCCATTTTG  
TTTCTGGGGT GGACATCCAA ACCGTTCGAT CGAATTCATT GCGGTAAAAC  
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5601 CAAGGCATGG AAAAATACAT AACTGAGAAT AGAGAAGTTC AGATCAAGGT  
GTTCCGTACC TTTTATGTA TTGACTCTTA TCTCTCAAG TCTAGTTCCA  
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5651 CAGGAACAGA TGGAACAGCT GAATATGGGC CAAACAGGAT ATCTGTGGTA  
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5701 AGCAGTTCCT GCCCGGCTC AGGGCCAAGA ACAGATGGAA CAGCTGAATA
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5751 TGGGCCAAAC AGGATATCTG TGGTAAGCAG TTCCTGCCCC GGCTCAGGGC
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5801 CAAGAACAGA TGGTCCCCAG ATGCGGTCCA GCCCTCAGCA GTTCTAGAG
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5851 AACCATCAGA TGTTTCCAGG GTGCCCCAAG GACCTGAAAT GACCCTGTGC
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6301 GGCTGCGGCG AGCGGTATCA GCTCACTCAA AGGCGGTAAT ACGGTTATCC
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6401 AAAGGCCAGG AACCGTAAAA AGGCCGCGTT GCTGGCGTTT TTCCATAGGC
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6501 CGAAACCCGA CAGGACTATA AAGATACCAG GCGTTTCCCC CTGGAAGCTC
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6551 CCTCGTGCGC TCTCCTGTTC CGACCCTGCC GCTTACCGGA TACCTGTCCG
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6601 CCTTTCTCCC TTCGGGAAGC GTGGCGCTTT CTCATAGCTC ACGCTGTAGG
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6701 ACCCCCCGTT CAGCCCGACC GCTGCGCCTT ATCCGGTAAC TATCGTCTTG
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6751 AGTCCAACCC GGTAAGACAC GACTTATCGC CACTGGCAGC AGCCACTGGT
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6801 AACAGGATTA GCAGAGCGAG GTATGTAGGC GGTGCTACAG AGTTCTTGAA
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6851 GTGGTGGCCT AACTACGGCT AACTAGAAG AACAGTATTT GGTATCTGCG
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6901 CTCTGCTGAA GCCAGTTACC TTCGGAAAAA GAGTTGGTAG CTCTTGATCC
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7451 CTAGAGTAAG TAGTTCGCCA GTTAATAGTT TGCGCAACGT TGTGCCATT
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7501 GCTACAGGCA TCGTGGTGTC ACGCTCGTCG TTTGGTATGG CTTCAATCAG
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7551 CTCCGGTTCC CAACGATCAA GGCGAGTTAC ATGATCCCC ATGTTGTGCA
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7601 AAAAAGCGGT TAGCTCCTTC GGTCTCCGA TCGTTGTCAG AAGTAAGTTG
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7651 GCCGCAGTGT TATCACTCAT GGTTATGGCA GCACTGCATA ATTCTCTTAC
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7701 TGTCAATGCCA TCCGTAAGAT GCTTTTCTGT GACTGGTGAG TACTCAACCA
ACAGTACGGT AGGCATTCTA CGAAAAGACA CTGACCACTC ATGAGTTGGT

7751 AGTCATTCTG AGAATAGTGT ATGCGGCGAC CGAGTTGCTC TTGCCCGGCG
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7801 TCAATACGGG ATAATACCGC GCCACATAGC AGAACTTTAA AAGTGCTCAT
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7851 CATTGGAAAA CGTCTTTCGG GCGGAAAACT CTCAAGGATC TTACCGCTGT
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7901 TGAGATCCAG TTCGATGTAA CCCACTCGTG CACCCAACTG ATCTTCAGCA
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7951 TCTTTTACTT TCACCAGCGT TTCTGGGTGA GCAAAAACAG GAAGGCAAAA
AGAAAATGAA AGTGGTTCGCA AAGACCCACT CGTTTTTGTC CTTCCGTTTT

8001 TGCCGCAAAA AAGGGAATAA GGGCGACACG GAAATGTTGA ATACTCATAC
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8051 TCTTCCTTTT TCAATATTAT TGAAGCATTT ATCAGGGTTA TTGTCTCATG
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8101 AGCGGATACA TATTTGAATG TATTTAGAAA AATAAACAAA TAGGGGTTCC
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8151 GCGCACATTT C
CGCGTGTAAG G

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10979.03765260

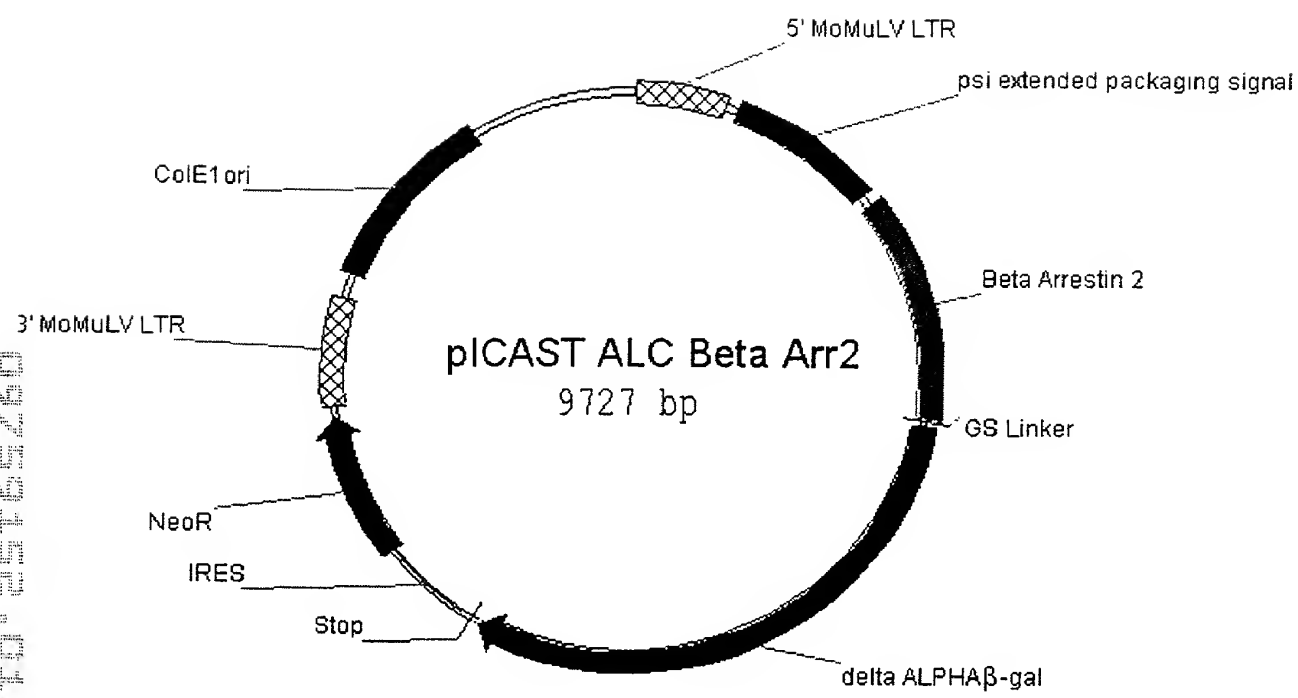


Figure 14

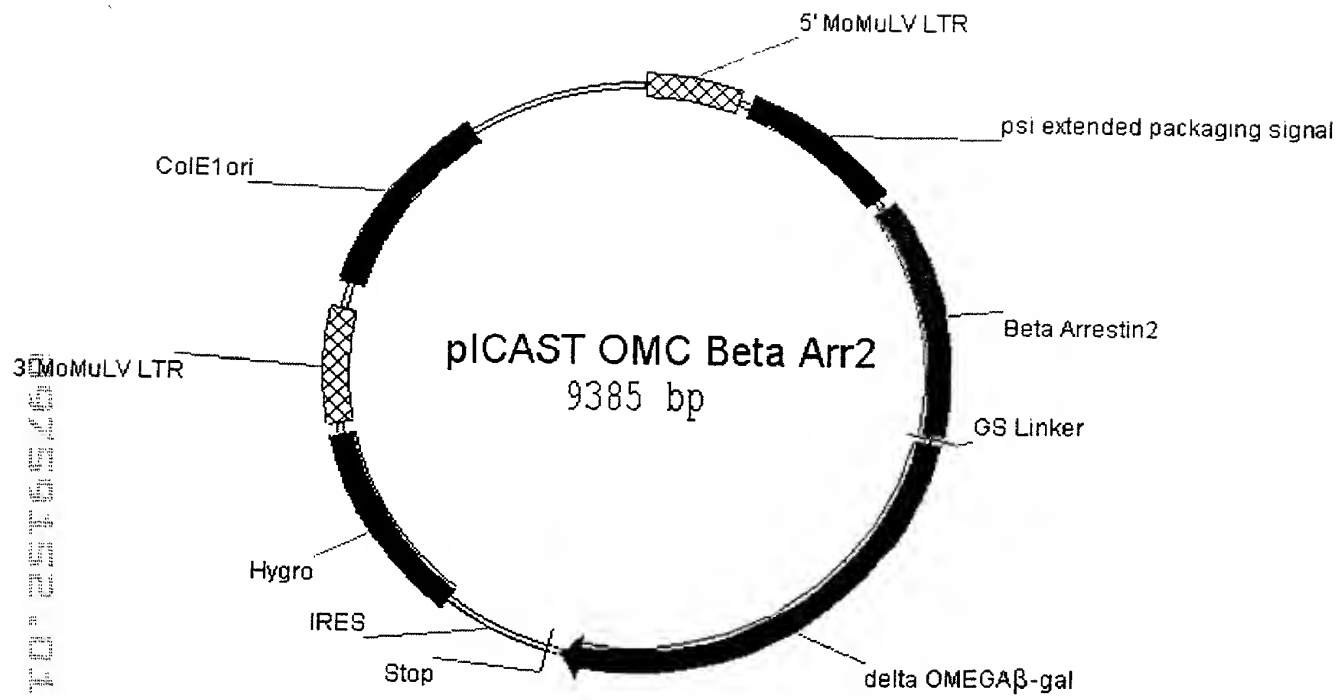


Figure 15

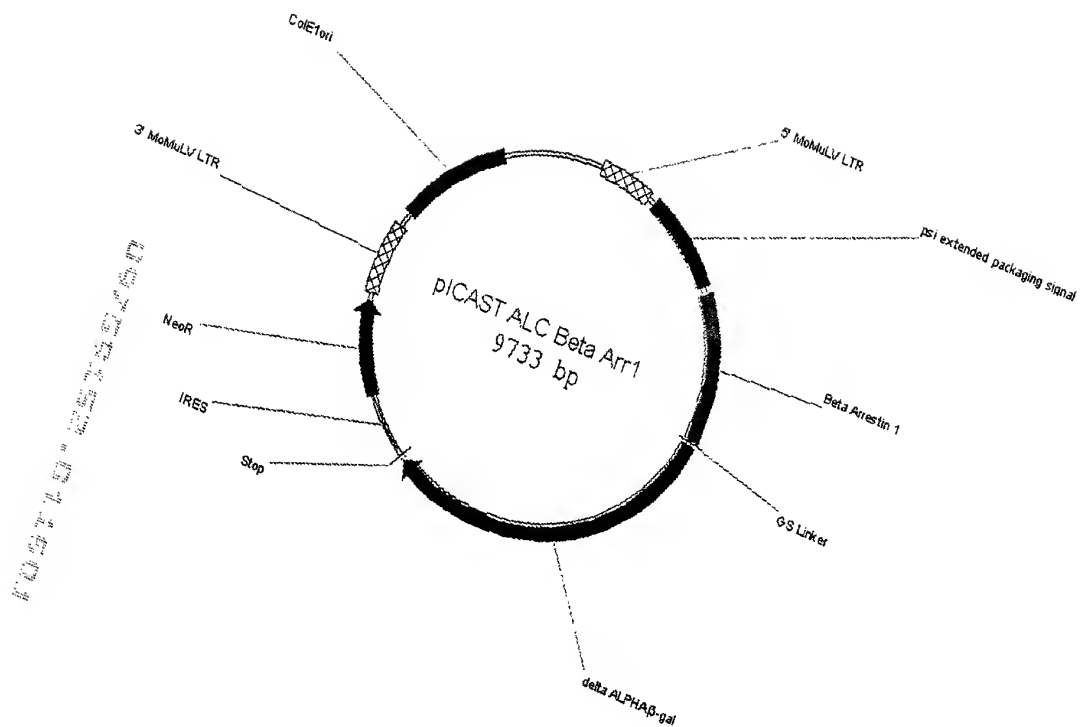


Figure 16

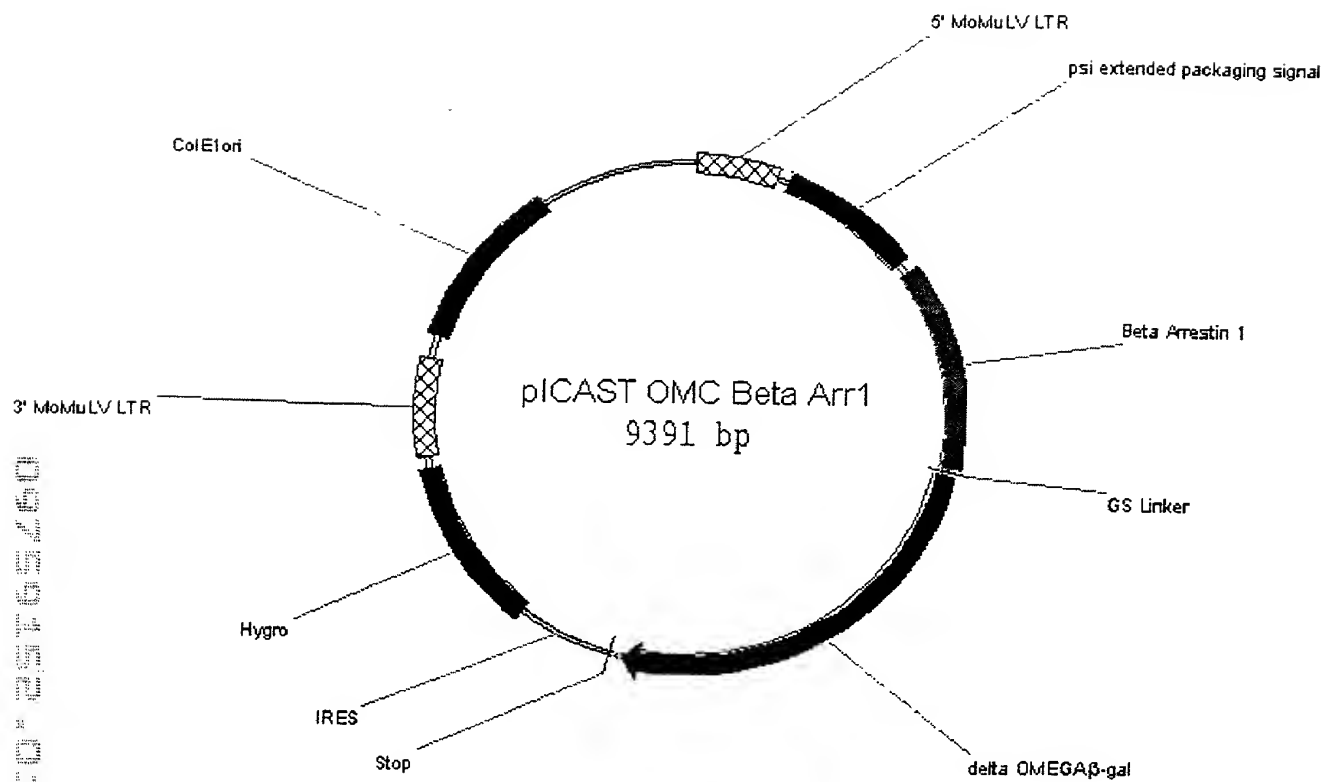


Figure 17

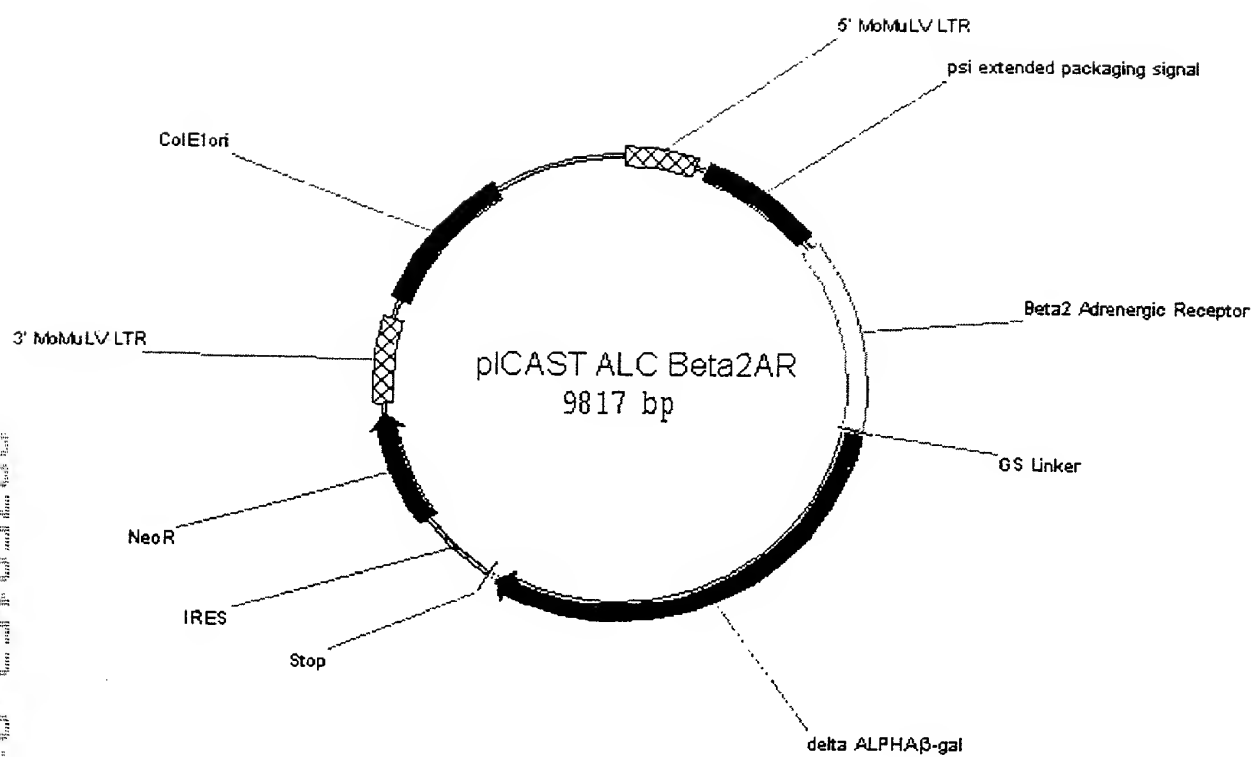


Figure 18

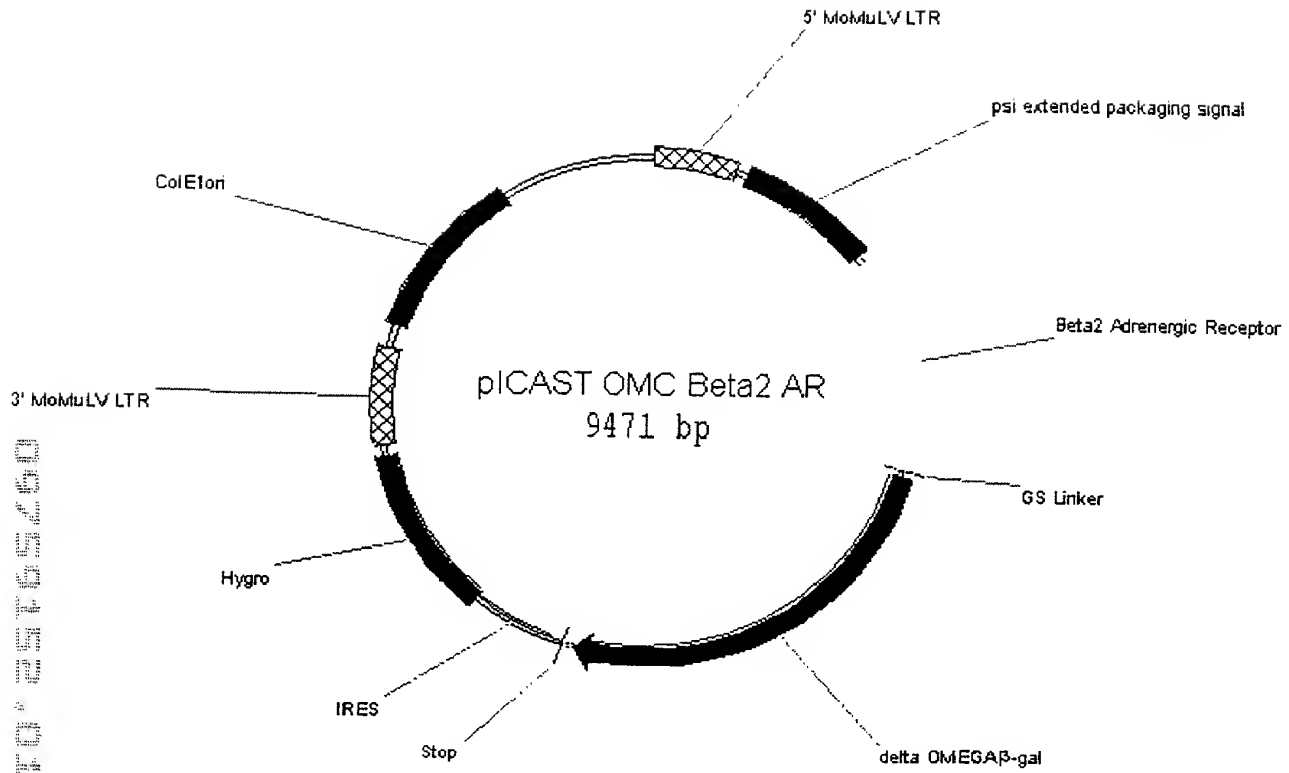


Figure 19

09759450-041604

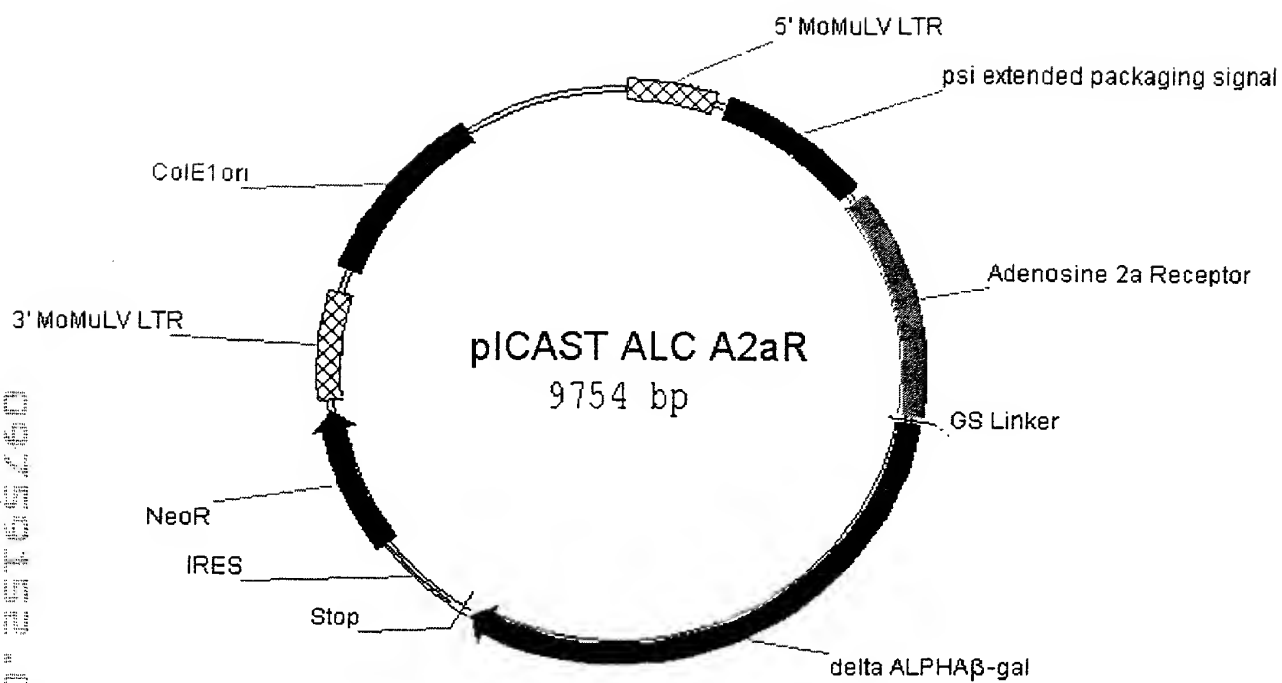


Figure 20

097594152-014601

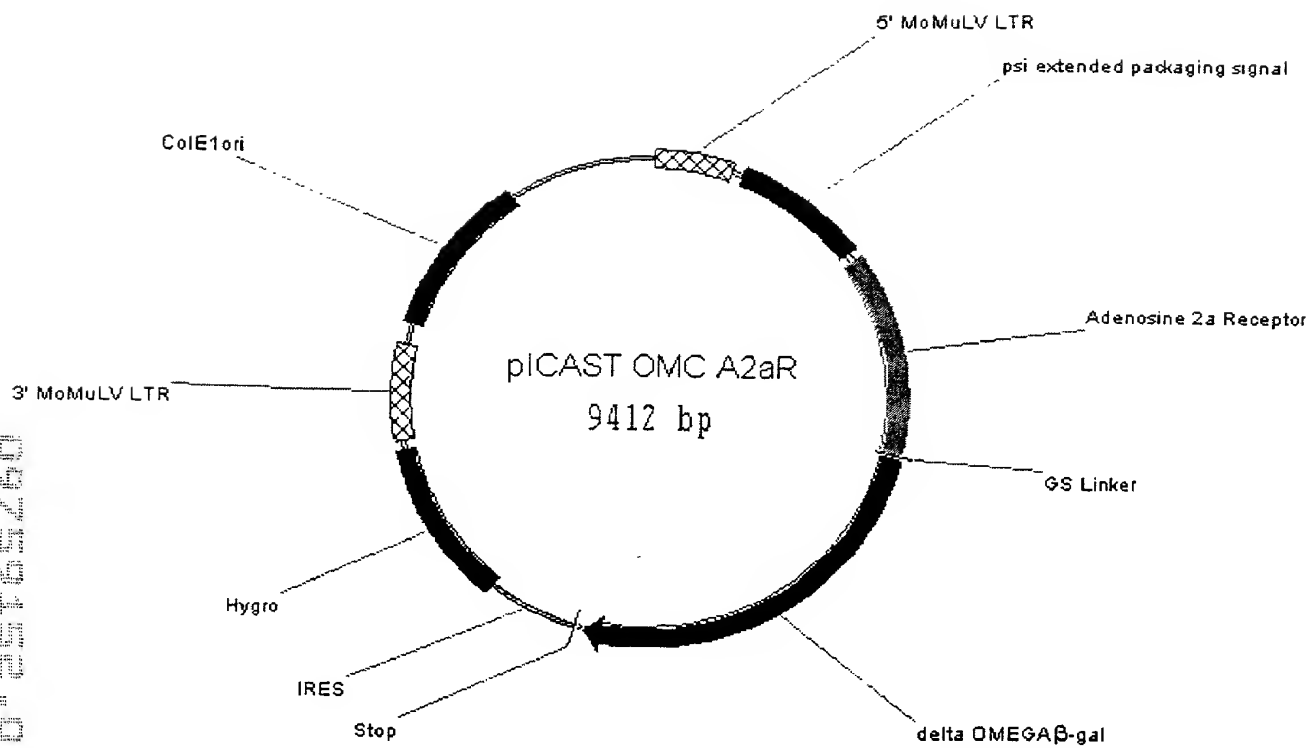


Figure 21

09759453_014804
T0970" 2565/50

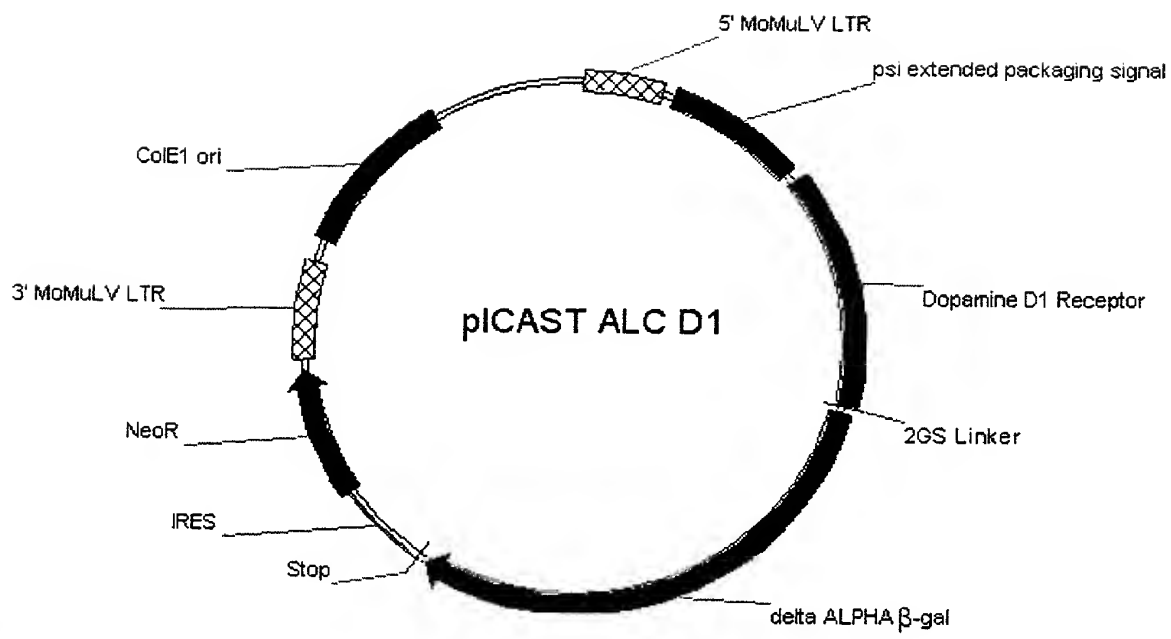
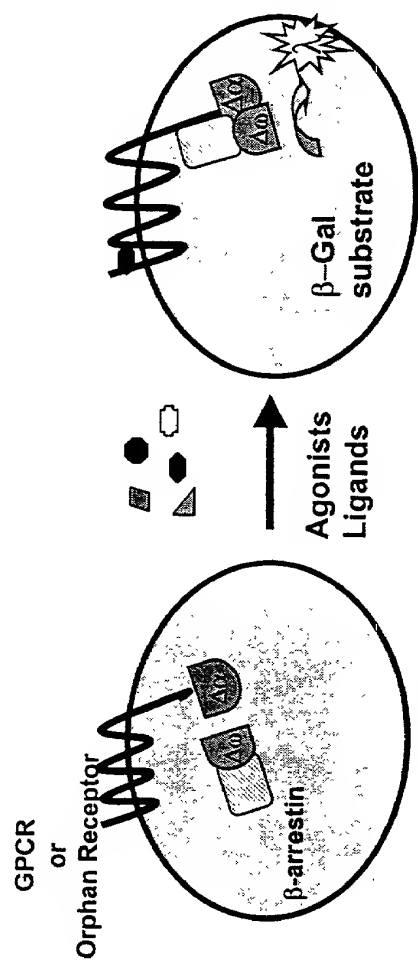


Figure 22

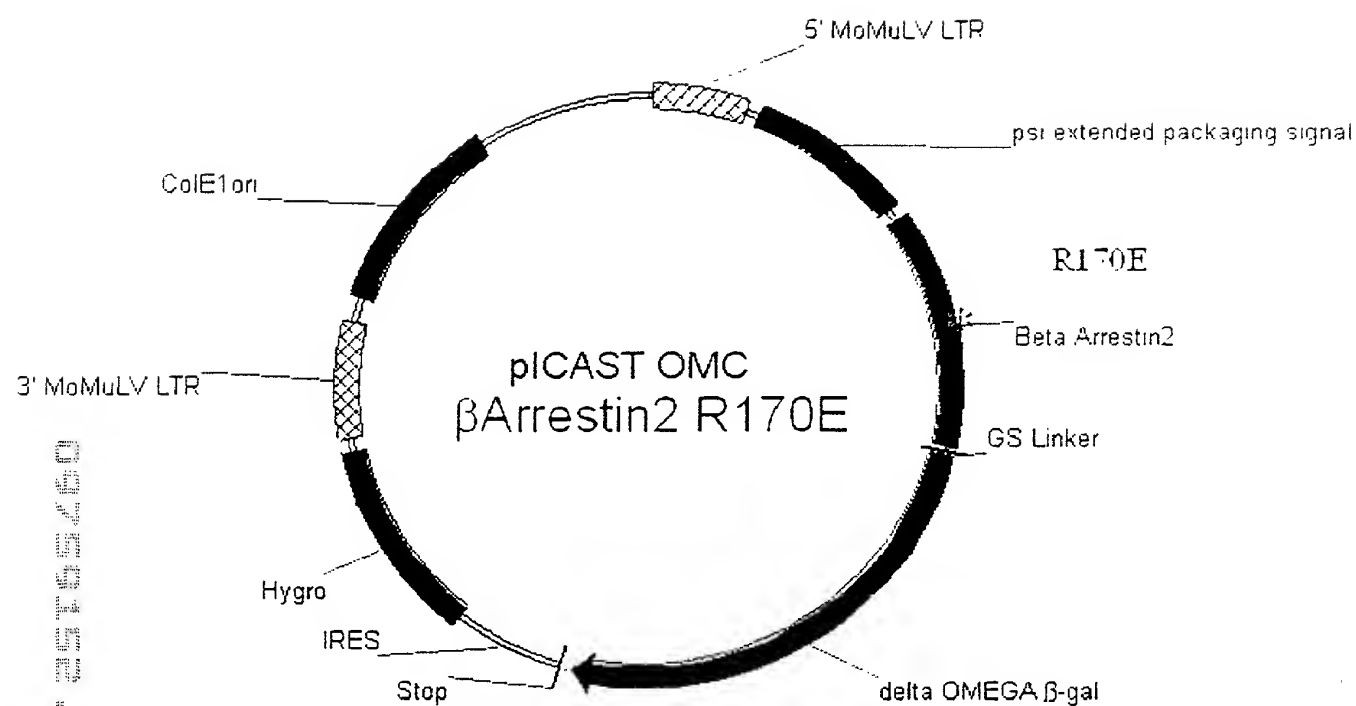
Functional GPCR Activation Assay and Ligand Fishing for Orphan Receptors by β -galactosidase mutant complementation in ICASTM System



Examples



Figure 23



Vector for Expression of mutant (R170E) β -arrestin2 as a fusion with β -gal $\Delta\omega$.

FIGURE 25

Phosphorylation Insensitive Mutant R170E β -Arrestin2 $\Delta\omega$
Binds to β_2 AR $\Delta\alpha$ in Response to Agonist Activation

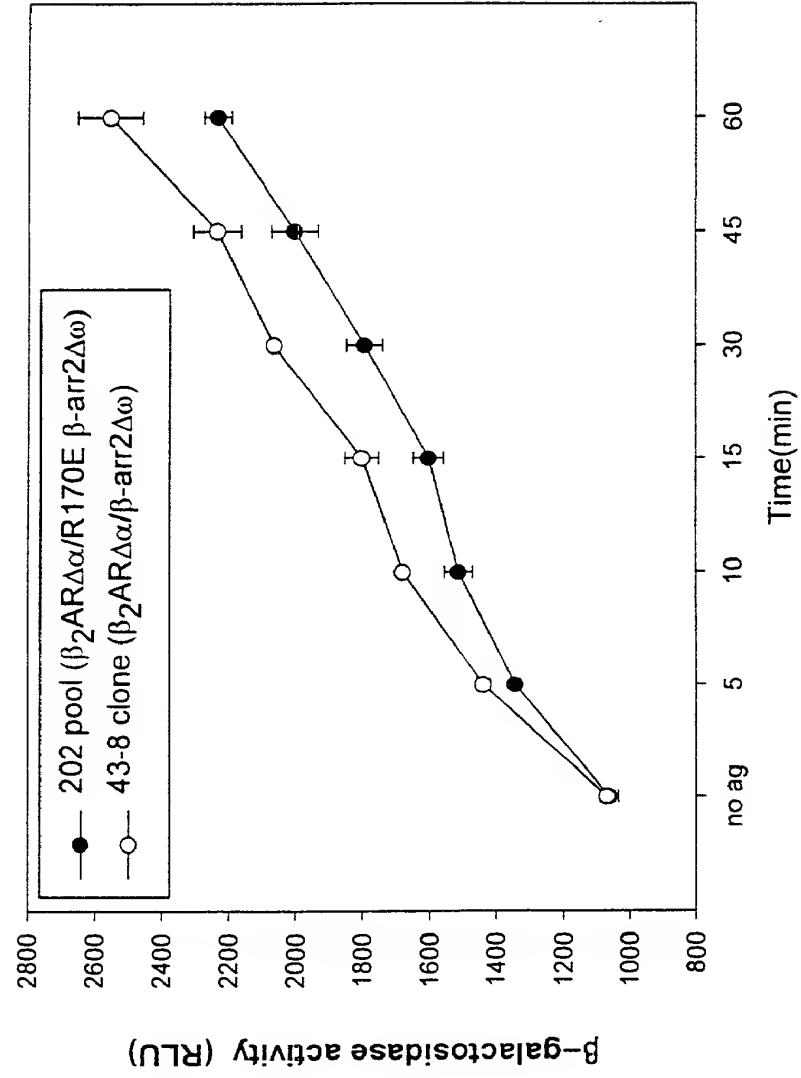
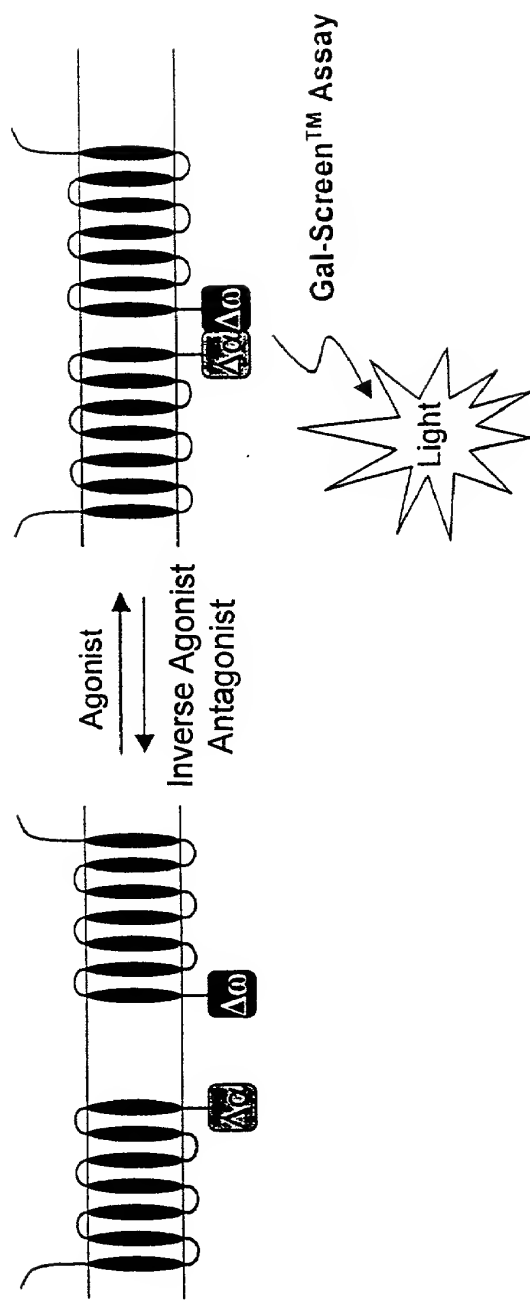


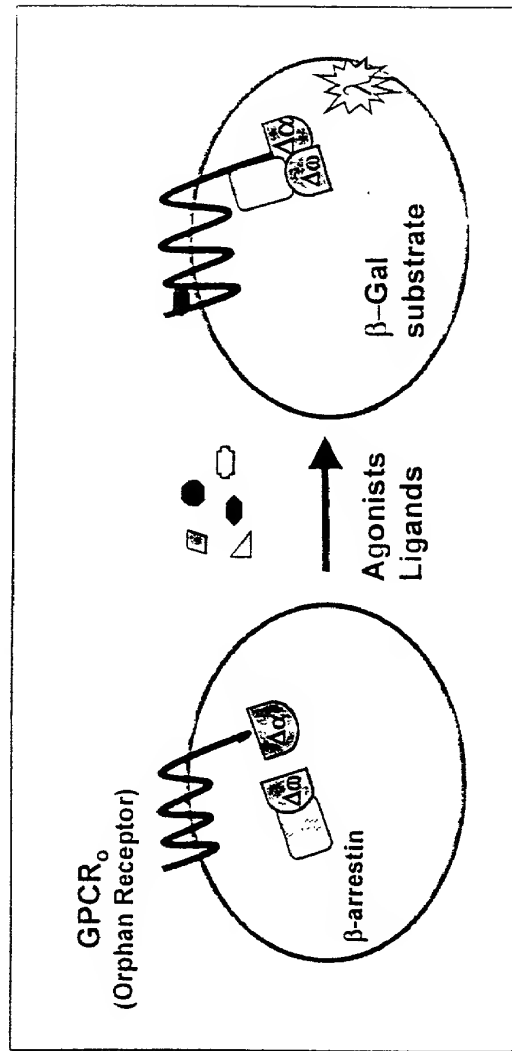
FIGURE 26



GPCR dimerization measured by β -gal complementation

FIGURE 27

Example-



Ligand Fishing for Orphan Receptors by β -galactosidase mutant complementation in ICASTM System

FIGURE 28